

[ Planning Example ]

Malta RMP

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[ Planning Example ]

- Examples of Plan Documents (found in the class Notebook, Tab 3):
  - Map
  - Table 2-24
  - Chapters 3 and 4

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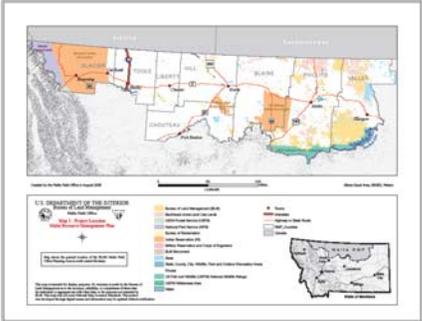
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[ Malta RMP Study Area ]



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## Comparison of Economic Impacts

- Alternatives A-D
  - *Agricultural and Livestock Use*
    - BLM would continue to provide about 17 percent of the total livestock forage needs in the PA and economic dependency of livestock producers on BLM forage would remain unchanged. About 760 operators would continue to have grazing permits on 1,030 allotments. Livestock grazing would support approximately 110 jobs and \$2.34 million in labor income (Table 4-8). Farm/ranch related labor income would continue to account for approximately one percent of total income in the eight-county study area and less than three percent of employment (IMPLAN 2006). Annual federal revenues from livestock grazing fees would be about \$476,000 annually, of which about \$70,000 would be distributed to the counties. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated \$5.19 million.

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## Comparison of Economic Impacts

- Alternative A
  - *Ecosystem Restoration*
    - Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 50 jobs and \$1.1 million in labor income annually.

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## Comparison of Economic Impacts

- Alternatives B - D
  - *Ecosystem Restoration*
    - Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 60 jobs and \$1.5 million in labor income annually.

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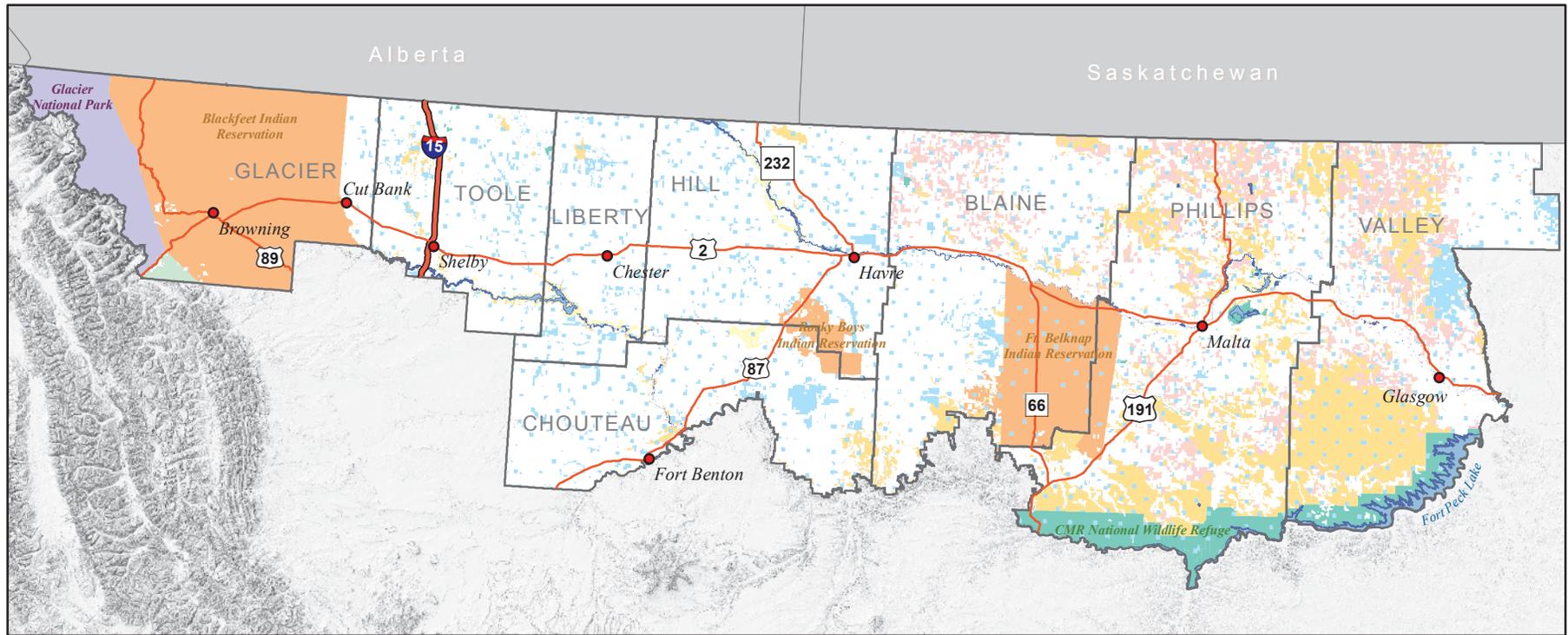
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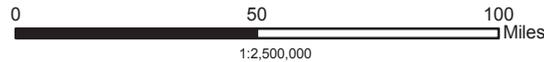
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Created by the Malta Field Office in August 2008



Albers Equal Area, NAD83, Meters

U.S. DEPARTMENT OF THE INTERIOR  
Bureau of Land Management  
Malta Field Office

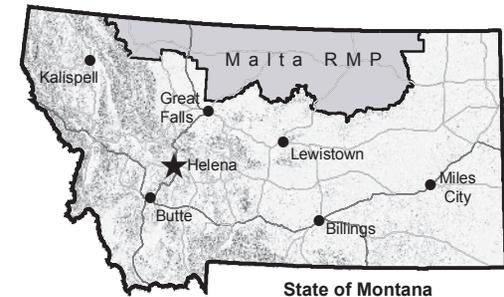


**Map 1 - Project Location**  
**Malta Resource Management Plan**



Map shows the general location of the BLM's Malta Field Office Planning Area in north central Montana.

- Bureau of Land Management (BLM)
- Bankhead-Jones Land Use Lands
- USDA Forest Service (USFS)
- National Park Service (NPS)
- Bureau of Reclamation
- Indian Reservation (IR)
- Military Reservation and Corps of Engineers
- BLM Monument
- State
- State, County, City; Wildlife, Park and Outdoor Recreation Areas
- Private
- US Fish and Wildlife (USFW) National Wildlife Refuge
- USFW Wilderness Area
- Water
- Towns
- Interstate
- Highway or State Route
- RMP\_Counties
- Canada



State of Montana

This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.

**Table 2. . Summary Comparison of Impacts**

<b>Economics</b>				
	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<i>Agricultural and Livestock Use</i>	BLM would continue to provide about 17 percent of the total livestock forage needs in the PA and economic dependency of livestock producers on BLM forage would remain unchanged. About 760 operators would continue to have grazing permits on 1,030 allotments. Livestock grazing would support approximately 110 jobs and \$2.34 million in labor and proprietor's income (Table 4-8). Farm/ranch related labor and proprietor's income would continue to account for approximately one percent of total income in the eight-county study area and less than three percent of employment (IMPLAN 2006). Annual federal revenues from livestock grazing fees would be about \$476,000 annually, of which about \$70,000 would be distributed to the counties. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated \$5.19 million.			
<i>Minerals Development (common)</i>	Federal minerals leased for oil/gas exploration, development, and production would increase from 1.629 million acres to about 2.178 million acres when areas deferred from leasing are available after RMP revision. Annual leasing revenues would increase from \$3.5 million to \$4.4 million. About 70 percent of federal natural gas production would occur in Phillips County and almost 70 percent of federal oil production would occur in Toole County. The amount of sand/gravel produced (about 38,500 short tons per year) and associated royalties (about \$16,000) would remain unchanged. Minerals related activities would be the largest contributor to local employment and income of all major BLM land/mineral uses.			
<i>Minerals Development</i>	Federal oil/gas production would increase by 3.7 % over current levels. Annual production of 18.93 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of sand / gravel, and 65,000 short tons of bentonite would support about 1,020 local jobs and \$61.7 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about \$28.2 million; of which about \$11.9 million would be distributed to the state and counties. Net residential property sales could be reduced by an average of 22% if a well is drilled near the property when it is being sold.	Federal oil/gas production would increase by 3.6 % over current levels. Annual production of 18.91 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of sand / gravel, and 65,000 short tons of bentonite would support about 1,020 local jobs and \$63.8 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about \$28.1 million; of which about \$11.8 million would be distributed to the state and counties. Residential property sales would least likely be affected because wells would not be drilled within 0.25 miles of residential property.	Federal oil/gas production would increase by 4.2 % over current levels. Annual production of 19.02 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand / gravel, and 65,000 short tons of bentonite would support about 1,030 local jobs and \$64.3 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about \$28.3 million; of which about \$12.0 million would be distributed to the state and counties. Residential property sales would be affected less than with Alternative A or D because wells would not be drilled within 500 feet of residential property.	Federal oil/gas production would increase by 4.6 % over current levels. Annual production of 19.09 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand / gravel, and 65,000 short tons of bentonite would support about 1,040 local jobs and \$64.7 million in income. Total annual federal revenues from mineral leasing, production, and sales would be about \$28.4 million; of which about \$12.0 million would be distributed to the state and counties. Effects on residential property sales would be similar to Alternative A.

<i>Recreation (common)</i>	Annual revenues from recreation use permits, campground receipts, and outfitter/guide receipts would be about \$10,000.			
<i>Recreation</i>	90,200 recreation visits would support about 60 jobs and \$1.3 million in labor income. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of \$4.11 million.	96,100 recreation visits would support about 60 jobs and \$1.4 million in labor income. The willingness to pay for recreation opportunities would represent an annual estimated consumer surplus of \$4.38 million.	96,300 recreation visits would support about 70 jobs and \$1.4 million in labor income. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of \$4.38 million.	Employment and income effects would be similar to Alternative B. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of \$4.37 million.
<i>Government</i>	BLM expenditures would support approximately 90 jobs and \$3.9 million in labor income.	BLM expenditures would support approximately 90 jobs and \$4.0 million in labor income.		
<i>Ecosystem restoration</i>	Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 50 jobs and \$1.1 million in total income annually.	Ecosystem restoration (mine reclamation and water treatment, mechanical treatments and prescribed burning, and invasive species treatments) and timber management would support about 60 jobs and \$1.5 million in total income annually.		
<i>Land and Realty</i>	Annual use authorizations would generate about \$100,000 of federal revenue and annual PILT would be about \$1.903 million. Construction of a 50 MW wind energy development would support about 70 local jobs and \$1.9 million in labor income during the two-year construction period. Beyond that, the development would support less than 10 jobs and annual labor income of about \$500,000 annually. It would generate \$95,000 in annual federal revenues. Annual employment associated with maintenance and operation of other lands/realty R-O-Ws would be negligible.			
<i>Combined Effects</i>	The combined effect of this alternative would be about 1,720 jobs and \$86.3 million, respectively (about 4.7 % and 7.1 % of total within the local economy for employment and income respectively). Annual program revenues to the federal government would be about \$28.8 million; payments to the State/ counties would be about \$13.9 million, most of which would be related to oil and gas production and PILT payments.	The combined effect of this alternative would be about 1,740 jobs and \$86.9 million, respectively. Annual program revenues to the federal government would be about \$28.8 million; payments to the State/ counties would be about \$13.9 million, most of which would be related to oil and gas production and PILT payments.	The combined effect of this alternative would be about 1,750 jobs and \$87.5 million, respectively. Annual program revenues to the federal government would be about \$29.0 million; payments to the State/ counties would be about \$13.9 million, most of which would be related to oil and gas production and PILT payments.	The combined effect of this alternative would be about 1,750 jobs and \$87.9 million, respectively. Annual program revenues to the federal government would be about \$29.0 million; payments to the State/ counties would be about \$14.0 million, most of which would be related to oil and gas production and PILT payments.
<i>Other</i>	Total economic impacts to the local economy would be small, e.g. none of the alternatives would cause changes in total local employment or			

<i>Combined Effects</i>	<p><b>income greater than 0.1 percent of current levels.</b> BLM management that would generate the most employment and income would be mineral development (mostly oil and gas development) and payments to state/counties. The industry sectors that would be most influenced by BLM land and mineral uses would be mining, government, and agriculture. The employment, income, and revenue effects of BLM resource management would be spread unequally among the counties and communities within the PA. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).</p>
<i>Soil and Water</i>	<p>Economic benefits from soil and water management and costs (from lost agricultural production, additional costs for municipal water treatments, shortened life of dams and reservoirs, additional cost of water for industrial purposes, reduced water recreation use, reduced soil productivity, and water pollution) associated with resource use are unknown.</p>

## Economics

The PA consists of approximately 2.7 million surface acres of land distributed across eight contiguous counties: Glacier, Toole, Liberty, Hill, Chouteau (North of the Missouri River), Blaine, Phillips, and Valley. The majority of these surface lands are located in Phillips County (40 percent), Valley County (37 percent), and Blaine County (17 percent). BLM administered lands within the PA accounts for approximately 15 percent of the total land area and BLM mineral estate accounts for 28 percent of the mineral estate in the eight counties (Table 3-29 in Section 3.8.1). Much of the economic activity is confined to these eight counties because the area is remote and no major population or business centers exist near the boundaries to the east, north, or west. Major business centers to the south include Great Falls (approximately 90 miles south of Shelby and 110 miles southwest of Havre), Lewistown (approximately 100 miles southeast of Fort Benton), and Billings (approximately 200 miles south of Malta). Economic activity is further restricted by 1) eight border crossings along the 300 mile border with Canada of which only one is open 24-hours per day; 2) only one major highway (Highway 2) to the West over the Rocky Mountains to Kalispell (approximately 156 miles west of Shelby), 3) one major highway (Highway 2) to the east (approximately 145 miles from Glasgow to Williston, ND (population 12,512) and 229 miles to Bismarck, ND (population 55,532)) and 3) only four highways that cross the Missouri River along the 270-mile southern border.

During the last century, ranching, farming, mining, natural gas development, the railroad and, in Valley County, construction of Fort Peck Dam and the establishment and subsequent closure of Glasgow Air Force Base have all been important factors in the social and economic history of the area. More recently, outdoor recreation, tourism, and the increasing presence of the US Border Patrol have been increasingly important contributors to the local economies. Long-term economic trends are also characterized by gradual population loss.

Agriculture played a dominant role in the region's initial post-European settlement and economic expansion. The development of the railroad across northern Montana in the late 1880's and the subsequent opening of the area to homesteading in the early 20th century ushered in an era of accelerated European settlement. Agriculture and other natural resource production helped spur the development of additional transportation infrastructure and the emergence of Havre, Malta, and Glasgow as regional trade and service centers for north-central Montana. In more recent times, the establishment and subsequent closure of Glasgow Air Force Base, and federal water and wildlife management projects and programs have played pivotal roles in the region's economic development. Mineral and energy resource development, primarily in the form of mining and natural gas, have also shaped the area's economic history. Mining and oil and gas industries have also been important contributors to the regional economic base through their fiscal support for local government and education.

Certain defining features of every area heavily influence and shape the nature of local economic activity. Principal among these are the size of the area's population, the presence of or proximity to large cities or regional population centers, types of longstanding industries such as oil and gas development and agriculture, and predominant land and water features and unique area amenities.

The following section provides a summary of demographic and economic trend information, followed by a description of the key industries in the PA that could be affected by BLM management actions. Area industries/economic sectors most heavily affected by BLM land management policies and programs are: (1) oil and gas exploration, development, and production, (2) travel, tourism and recreation, (3) cattle grazing and production, (4) government, (5) ecosystem restoration, and (6) other mineral exploration, mining, and reclamation. BLM lands provide areas for hunting and fishing, hiking and camping, and general sight-seeing, as well as providing important habitat for area fish and wildlife that spend time both on and off BLM lands.

Potential economic effects associated with the proposed RMP revision include changes in employment, income, public revenues, economic dependency, economic stability, and quality of life. The information contained in this section is presented to help clarify economic issues, describe relevant economic trends, and to provide context for potential changes to economic indicators that may be predicted in the Environmental Impact Statement (EIS) impact analysis.

Demographic and Economic Characteristics and Trends

The eight-county PA had an estimated total population of about 60,300 in 2005, with county populations ranging from 2,003 in Liberty County to 16,304 in Hill County. Havre (population 9,390) is the largest city and the largest business center in the PA. Other smaller business centers include Glasgow (population 3,018), Shelby (population 3,304), Cut Bank (population 3,167), and Malta (population 2,100).

Montana is one of the least densely populated states in the country, with an average population density of 6 persons per square mile compared to a national average of about 80 persons per square mile. The eight-county PA had an average population density of 2 persons per square mile, with county population densities ranging from just 1 person per square mile in Phillips County to 6 per square mile in Hill County where Havre is the center of economic activity.

The population in the PA is declining, i.e., it decreased by 3.8 percent between 1990 and 2005 compared to a 17-percent statewide increase. Population declined in all of the PA counties with the exception of Glacier County, which experienced a net population increase of 11.8 percent between 1990 and 2005 and Chouteau County which increased by less than 1 percent during the same period.

- The Economic Profile System indicates that housing affordability index is 192, which suggests that the median family can afford the median house. The majority of recent job growth has been in wage and salary employment (people who work for someone else); however, job growth in the PA has been slower than those of both the state and national averages. Income growth (1970-2004) in the PA has also been slower than the state and national averages.
- Data (employment, labor income, number of industries, and economic diversity) that summarize economic conditions and activity are shown in Table 3-35. The PA makes up about 19 percent of the state land area; but only about 7 percent of the state's population, 6 percent of the state's employment, and 5 percent of the state's labor income. The PA economy includes only 42 percent of the industries found in the state's economy. Liberty County has the least number of industries and the Chouteau County economy is the least diverse. Hill County has the most industries represented in its economy, and Hill and Valley economies are considered the most diverse.

**Table -3-35: General Economic Indicators**

County/Area	Employment	Labor Income (\$ millions)	Number of Industries	Shannon Weaver Index*
Montana	627,303	21,669	354	0.71
Malta RMP area	35,876	1,152	156	0.64
Blaine	3,738	117	91	0.56
Chouteau	3,025	76	82	0.51
Glacier	6,669	253	99	0.56
Hill	10,165	336	124	0.62
Liberty	1,527	41	73	0.54
Phillips	3,021	74	96	0.59
Toole	3,460	134	93	0.57
Valley	4,272	121	106	0.62

\*Shannon Weaver Index is one of several diversity indices used to measure diversity in categorical data.

Source: IMPLAN, 2006 data

Table 3.36 summarizes industry output, employment, and labor income (employee compensation plus proprietor income) for the PA by aggregating the industrial sectors by two-digit North American Industry Classification System (NAICS) values. Industry output, as used here, is the value of an industry's total production expressed as a single dollar figure. The data presented in this section were compiled by the Minnesota IMPLAN Group from a number of sources, including Census Bureau economic censuses, Bureau of Economic Analysis output, and employment projections developed by the Bureau of Labor Statistics (IMPLAN, 2006 data).

**Table -3-36: Output, Employment, and Income for the Malta Field Office Planning Area**

<b>Industry*</b>	<b>Industry Output*</b>	<b>Employment</b>	<b>Employee Compensation and Proprietor Income*</b>
Ag, Forestry, Fish & Hunting	587	6,089	122
Mining	495	1,125	81
Utilities	129	248	25
Construction	153	1,496	45
Manufacturing	161	497	15
Wholesale Trade	81	801	31
Transportation & Warehousing	297	1,661	95
Retail trade	183	3,103	72
Information	92	440	18
Finance and insurance	135	1,119	34
Real estate and rental	218	997	36
Professional- scientific and tech services	78	828	25
Management of companies	1	6	<1
Administrative and waste services	70	1,427	20
Educational services	13	382	6
Health and social services	175	2,548	79
Arts- entertainment & recreation	25	700	8
Accommodation & food services	113	2,516	34
Other services	96	2,028	25
Government & non NAICS	603	7,864	384
Total	3,706	35,876	1,153

\*Millions of dollars  
IMPLAN 2006 data

Key Industries in the RMP area Affected by BLM Management

**Ranching**

Ranching is an important part of the history, culture, and economy of the RMP area counties. Grazing is allowed on BLM lands for the purpose of fostering economic development for private ranchers and ranching communities by providing ranchers access to additional forage (GAO, Sept. 2005). BLM's major contribution to the area's livestock industry is largely through providing grazing lands. Livestock grazing on BLM lands is authorized on an annual basis. The established preference limit for grazing on public lands within the PA is 410,814 AUMs. This preference is the maximum number of AUMs that ordinarily could be offered under ideal forage conditions. However, actual use of AUMs varies from year to year due to factors such as drought, wildland fire, financial limitations on operators, and implementation of grazing management to improve range conditions. Across the PA, BLM provides almost one-fifth of the forage needed to support the livestock produced. Data on the number of farms and livestock inventories by county are presented in Table 3.37. Livestock grazing within grazing districts and by land status by county is summarized in Table 3-38.

**Table 3-37 Livestock Operations by County**

County/Area	Number of Farms	Cattle & Calves Inventory*	Sheep & Lamb Inventory	Total Annual AUMs of Feed Needed**	BLM AUMs**	Dependency on BLM (BLM AUMs / Total AUMs)***
MaFO Planning Area	1,779	340,866	22,218	2,098,526	360,801	.17
Blaine	296	63,645	9,161	403,850	49,507	.12
Chouteau	229	33,650	1,003	204,307	11,904	.06
Glacier	241	41,003	535	247,308	261	<.01
Hill	221	22,210	851	135,302	1,545	.01
Liberty	70	13,026	22	78,204	2,801	.04
Phillips	290	71,835	4,072	440,789	158,692	.36
Toole	109	13,645	1,774	86,134	4,275	.05
Valley	323	81,852	4,800	502,632	131,816	.26

Source: 2002 Census of Agriculture.

\*Note: Each cow is counted as one unit and each calf is counted as one unit.

\*\* 2006 Actual use level. Source: BJ Rhodes, 1/25/2007

\*\*\*Total Annual AUMs of Feed Needed = ([Cattle and Calves inventory/2] x 12 months) + [Sheep & Lamb inventory/5] x 12 months)

**Table 3-38: AUMs by county and land status across the planning area.**

	Section 3		Section 15			
	Public Domain	Land Utilization	Public Domain	Land Utilization	Bureau of Reclamation	Total

Blaine	37611	30963	177			68751
Chouteau		2539	8877		10	11416
Glacier			266			266
Hill			823		53	876
Liberty			2715		94	2809
Phillips	44197	75022			1582	120801
Pondera			20			20
Toole			4265			4265
Valley	63161	80418	5	391		143975
Total	144969	188942	17148	391	1739	353179

#### RAS Range Administrative System

BLM issues grazing permits and leases to authorize livestock grazing on public land, within the PA currently consisting of about 760 livestock operators. These operators use 1,030 allotments and are authorized to harvest about 410,814 Animal Unit Months (AUMs) annually. Less than half (approximately 43 percent) of the farm/ranch units in the planning area hold BLM grazing permits/leases. Table 3-38 shows 2006 actual BLM use levels by county. The three-year annual average use level for 2005-2007 was 352,750 AUMs (Zellmer, 2008). The average annual level of use for Section 3 AUMs was 336,333 AUMs and the average annual level of use for Section 15 AUMs was 16,269 AUMs (Zellmer, 2008). Annual revenues to the federal government averaged \$476,000 given a BLM grazing fee of \$1.35 per AUM.

Cattle are the most prevalent class of livestock, although bison, sheep, and horses also graze some public land in the PA. Livestock operations are primarily cow/calf operations. Most calves are born in late winter through spring on private lands. Cattle are turned out to graze as cow/calf pairs. Calves have historically been weaned in the fall and most leave the region to be grown out and/or fed in other parts of the US. At weaning, most cows have been taken to winter pasture where they remain until they calve the following year. Approximately 1,400 jobs and \$17 million in labor and proprietor's income were associated with cattle ranching and livestock production in 2006 (IMPLAN, 2006). The amount of BLM grazing land and the dependency of local livestock operators varies among the counties. Phillips and Valley Counties offer the most grazing land and the highest dependency on BLM land for livestock grazing. Chouteau, Glacier, Hill, Liberty, and Toole Counties offer the least amount of BLM grazing as well as the smallest dependency on BLM for livestock forage needs. In Fiscal Year 2007, livestock grazing on BLM lands involved livestock operators who had 609 Section 3 grazing permits (i.e., grazing on public lands within grazing districts, BLM Manual 1373.12) and 149 Section 15 grazing leases (grazing on public lands outside of grazing districts). Fifty percent of revenues from Section 15 grazing fees on public domain lands are distributed to the state and counties; 12.5 percent of grazing fees from Section 3 leases are distributed to the state and counties. Total annual revenues distributed to the state and counties from the federal government grazing receipts averaged \$67,738 (\$56,756 for Section 3 grazing permits and \$10,982 for Section 15 grazing leases).

The grazing fee BLM charges is established by formula and is generally lower than fees charged by the other federal agencies, state, and private ranchers who set fees to obtain the market value of forage. The formula used to calculate the BLM grazing fee incorporates the ranchers' ability to pay and does not recover the agency's expenditures or capture the fair market value of forage. Livestock operations in the PA often involve large areas of land and ranchers depend on a mix of private and federal lands to graze cattle seasonally. None of the livestock operations are wholly dependent on forage coming from public lands. To qualify for a grazing permit/lease on public land an operator must have land and the capability to accommodate their livestock for a specified period of time on private land owned or controlled (base

property) apart from the public land (43 CFR 4110). The common qualification standard for the region was that the operator needed to accommodate livestock for four months on their base property to qualify to graze the same amount of livestock for eight months on public lands. Therefore an individual operator could not be dependent on more than 68 percent of their forage need coming from public land. Within the PA, it is rare for dependence on public land forage to exceed 50 percent and many operations depend on public land forage for less than 20 percent of their total forage needs. However, many of the BLM livestock operations depend heavily on forage from public lands during a specific season, i.e. many operators graze public land in the spring through fall for 5 – 7 months and winter their livestock on base property.

Although BLM forage comprises a relatively small share of total AUMs in the PA, this forage may be particularly valuable to livestock producers because the grazing fees are very favorable and it is often available during a critical period of the year when forage on private hay fields and meadows is being grown to provide forage for the winter. BLM grazing fees (\$1.35/AUM in FY2007, (BLM IM-2007-061)) are considerably lower than the statewide average of \$16 per AUM (Montana Agricultural Statistics, National Agricultural Statistics Service) and the 2007 minimum fee charged on Montana State Lands was \$7.87 per AUM (Montana Department of Natural Resources and Conservation, Oct. 2, 2006). Access to BLM and Forest Service grazing may be important to area livestock producers even though additional management costs are usually incurred to use these lands. According to a GAO report on livestock grazing, 2005, “fees charged by private ranchers and state land agencies are higher than the BLM and Forest Service fees because, generally, ranchers and state agencies seek to generate grazing revenues by charging a price that represents market value for that land and/or the services provided.” In 2004, the average private fee per AUM in Montana was \$15.90. Adjusted to 2008 dollars, this would be \$16.93. The difference between the statewide average grazing fee (\$16.93/AUM) and the BLM fee (\$1.35/AUM) represents an estimated consumer surplus to the permittee of up to \$15.58 per AUM. The total estimated consumer surplus associated with 333,231 AUMs spread among about 760 operators within the planning area is an estimated \$5.19 million.

The response coefficients shown in **Table 3-39** indicate how total employment and total labor income in the local economy respond to changes in levels of livestock grazing, i.e. for every 1,000 HM change in livestock grazing on public lands there is a corresponding change of 0.25 jobs and \$5,436 within the local economy.

**Table 3-39 Response Coefficients for Resource Uses on BLM Administered Lands**

	Units	Total Employment (jobs/M units)	Total Labor Income (\$/M units)
Grazing Management			
• Cattle and Horses	HMs	0.25	5,436
Mineral Production			
• Gas Extraction (Natural Gas)	M Cubic Feet	0.05	2,868
• Oil Production	bbl	0.58	36,643
• Sand and Gravel	Short tons	0.05	2,213
• Clay (Bentonite)	Short tons	0.66	30,429
Recreation Use*			
• Day Use	visits	0.31	7,188

• Non-local Overnight	Visits	1.55	33,342
• Local Overnight	Visits	0.60	19,674
BLM Employment and Non-salary Expenditures			
• BLM Salaries	\$	0.01	1,142
• BLM Non-salary Expenditure	\$	0.01	286
Ecosystem Restoration			
• Pre-commercial Thinning	Acres	30.56	729,343
• Weed Spraying- non BLM	Acres	8.44	201,463
• Weed Spraying- BLM	Acres	1.44	58,813
• Prescribed burns/mechanical treatments- grasslands	Acres	0.17	7,117
• Prescribed Burning- forests	Acres	6.85	279,342
• Mine Reclamation/water treatment	Project	33.1	801,683
Timber Management			
• Logging	MCF	56.56	1,490

Source: IMPLAN, 2006 data

\* Averaged from response coefficients from IMPLAN, 2006 data

### Mineral development and production

Mining sector activities include gold mining, oil production, natural gas production, and bentonite mining. Gold mining occurred in the Little Rocky Mountains for more than 100 years and once provided a major economic stimulus to the region and employed dozens of people. However, since the closure of the Zortman-Landusky mine in 1998, the few remaining jobs related to gold mining have been associated with environmental reclamation, water management, and restoration of the mine. The combined site maintenance and water treatment costs will run an estimated \$2.5 million per year. A few people were employed in bentonite mining south of Malta until the 1980's when that mine closed.

Jobs in the oil and natural gas development and production account for nearly all of the direct employment reported in the mining sector today. Local oil and gas production also supports jobs in the natural gas pipeline transmission industry. Local contractors, as well as regional firms primarily from the Williston Basin in North Dakota provide contract services to local oil and gas fields. Natural gas production in Phillips County ranked first in the state in 2005 and more than half of the natural gas production from federal mineral estate in Montana comes from the PA (MMS, 2008). Phillips County is also the largest producer of natural gas from federal mineral estate in Montana (MMS, 2008).

Aggregated mining sectors (industry sectors 19-29) support approximately 1,130 total jobs and \$80 million in labor income within the PA (IMPLAN, 2006). Almost all of the jobs and labor income are associated with oil and gas production. Most of the oil and gas service companies associated with oil and gas operations in the PA are located within the PA. BLM's major contribution to the area's mineral production is to provide access to federally owned minerals. The amounts of federal minerals and the dependency of

local economies on that production vary among the counties. Table 3-40 displays the acres of federal minerals leased and amount of oil and gas production for each county. Phillips County had the largest amount of federal gas production and Toole County had the largest amount of federal oil production. About 10 percent of the oil produced in the PA comes from federal minerals and about 30 percent of the gas comes from federal minerals. The largest share of total production occurs in Phillips County where about 70 percent of all the gas production comes from federal minerals. Currently, 1,966 federal oil and gas leases exist in the PA. Nearly 1.5 million acres of mineral estate are covered by these leases. An additional 549,000 acres have been nominated but are suspended pending completion of the Malta RMP (Karen Johnson, 2008).

Mineral and energy development is closely linked to fiscal conditions of local governments and school districts through contributions to local property-tax base, oil/gas production taxes, and federal mineral royalty payments on production from public mineral estate. Federal oil and gas leases generate a one-time lease bid as well as an annual rental. The minimum bid is \$2.00 per acre; lease rental is \$1.50 per acre per year for the first five years and \$2.00 per acre per year thereafter.

Oil and gas production in Montana is not subject to ad valorem, or property taxes; rather it is subject to production taxes. Federal oil and gas royalties generally equal 12.5 percent of the value of production. Half of these royalties are distributed to the state, of which 12.5 percent is distributed back to the county of production (personal conversation with Van Charlton, Natural Resources Evaluation Section, Montana Department of Revenue). Fiscal Year 2006 payments to the counties within the planning area amounted to \$2.1 million (Montana Department of Revenue, FY 2006).

**Table 3-40 County Oil and Gas Leasing and Production**

<b>County/Area</b>	<b>2005 Total Oil Production (Barrels)*</b>	<b>2007 Oil Production: Federal Minerals (Barrels)**</b>	<b>2005 Gas Production (MCF) *</b>	<b>2007 Natural Gas Production: Federal Minerals (MCF)**</b>	<b>BLM Leased Acres</b>
MaFO PA	1,251,302	167,687	56,582,088	18,254,938	1,492,130
Blaine	201,668	47,599	13,995,890	3,796,012	300,467
Chouteau			1,731,871	310,577	65,205
Glacier	467,594	4,399	1,699,950	28,401	30,857
Hill	2,281		14,130,071	503,446	72,143
Liberty	81,503	4,140	1,986,181	151,056	20,443
Phillips			17,755,513	12,647,147	679,458
Toole	378,707	111,549	4,197,845	318,073	66,361
Valley	119,549		1,084,767	500,226	446,059

Source: \* Montana Department of Natural Resources and Conservation, Oil and Gas Conservation Division, Annual Review 2006

\*\*MMS, 2008

The production equipment, gathering and transmission-system pipelines, ancillary facilities, and some equipment classified as pollution-control equipment are, however, subject to ad valorem property tax. The established assessment rate to established taxable value for Class 4-Commercial and Industrial property is 3.3 percent; the rate for Class 5-Pollution Control Equipment is 3.0 percent; and the rate of Class 9-Pipelines and non-electrical generating property of electrical utilities is 12.0 percent.

Detailed breakdowns of taxable values associated with the natural gas industry are not available. However, Class 9 property, which includes pipelines, is the largest category of taxable value in several of the counties shown and the largest category within the total PA (Table 3-41). Counties and school districts receive revenues from oil and natural gas production taxes and ad valorem property taxes on certain field and pipeline facilities. These revenues allow higher levels of government and/or school district services than would be available without these revenues. In other cases these revenues reduce the tax burden on residential, commercial and industrial property taxpayers within the county. These benefits can be offset by higher service demand associated with oil and gas activities; however, road maintenance appears to be the major function that requires a higher level of service as a result of oil and gas activities.

According to the Bowdoin Natural Gas Development Project Environmental Assessment (January, 2008), the cost of developing a well in an established field ranges from \$100,000 to \$300,000 including lease acquisition, surveying, cultural/biological clearance, site preparation, drilling, completion, surface facility and gathering system installation. Well production costs can run up to \$200 per well per month. Drilling is usually done by a contractor who transports a rig and crew into the area and drills several wells. Drilling occurs continuously until all wells are completed. The rig then moves to its next assignment. Drilling within an area has been done by only one or two companies at a time. The temporary workforce typically includes about 15 drilling-related workers, about 4 workers to cement the well, and a three-person logging crew. A second crew of about 14 will complete the wells drilled during one season. A third crew of 10-15 workers installs gathering lines for all wells drilled within a field during one drilling season. Drilling, completion, gathering system/field infrastructure construction crews are generally non-local and stay in nearby towns on a temporary basis. Some crews hire a few local workers, but non-locals require temporary lodging in motels or recreational vehicles for the duration of their stay. Additional jobs are generated in the lodging, food service, entertainment, and automotive services sectors of the local economies. Field operations are typically performed by a few local employees and local contractors in the oil and gas service and construction industries.

Average income per job (\$48,817) in the mining sector is relatively high (Montana state average, 2000, Northwest Economic Associates). The industry supported about four percent of the total local economic output, one percent of the jobs, and three percent of the labor income.

The proximity of oil and gas wells and related facilities can influence residential property sales especially those on split estate land. Landowners who do not own mineral rights may be subject to oil and gas development on their land. Usually, these landowners enter into a surface use agreement and receive compensation, i.e. income, for the use of their land. Estimates of how individual properties are affected by nearby oil and gas development vary from case to case depending on specific location and the exact character and features of a property. Based on research in Colorado, BBC Research and Consulting reported in "Measuring the Impact of Coalbed Methane Wells on Property Values" that surface property owners perceive Coalbed Methane (CBM) activity "as having an adverse, if localized, effect on property values within view or earshot of CBM facilities." In the study, interviewees said they "believe a property is most affected in the event that a well is located directly on it, although the intensity of effect may vary with the size of the property and the opportunities available to maintain separation between the well and the residence or other improvement." BBC Research conducted hedonic Pricing Analysis that included 754 properties and concluded that the location of a well on a property at the time of a residential sale reduced the net value of the residential property by 22 percent. However, the study found that the impact of a well within 550 feet of a property (but not on the property) may be positive if one takes into account spacing orders and setback requirements. The study concluded that this positive effect "is likely attributable to a belief that the property in question would not be drilled because a well had already been drilled in close proximity." GIS analysis indicates that there are currently about 500 residential structures within the PA on lands with federal minerals that have high or moderate potential for oil and gas development (Keefer, 2008).

Other economic activity related to mining includes sand, gravel, and stone mining and quarrying, and support activities for these other mining activities. Currently, the only other mineral production within the planning area is sand and gravel production. There are 37 sites of public minerals spread across five counties. Total average annual production is about 26,000 cubic yards of dry gravel (38,480 short tons). Annual mineral material royalties from sales of federal mineral materials averages about \$15,750. None of these royalties go the State or local governments. However, the BLM does make sand and gravel available

**Table 3-41 Distribution of Assessed Valuation (Taxable Value) by County, by Property Class, FY 2006 (\$1,000)**

<b>Property Class</b>	<b>Blaine</b>	<b>Chouteau</b>	<b>Glacier</b>	<b>Hill</b>	<b>Liberty</b>	<b>Phillips</b>	<b>Toole</b>	<b>Valley</b>	<b>Planning Area</b>	<b>% of Total</b>
1. Net Mining Proceeds	0	0	0	0	0	0	0	0	0	0.00%
2. Gross Proceeds	0	0	0	0	0	0	0	0	0	0.00%
3. Ag Land	4,049	8,904	2,642	6,039	3,164	3,744	4,223	4,606	37,372	27.60%
4. Residential	2,133	3,412	3,180	8,025	1,476	1,995	2,758	3,619	26,598	19.64%
4. Commercial	430	556	1,539	2,949	201	561	1,752	1,243	9,231	6.82%
5. Commercial / Industrial	297	314	895	701	173	225	324	431	3,360	2.48%
7. Non-centrally Assessed Utilities	0	0	8	0	0	0	0	0	7,890	0.01%
8. Business Equipment	1,039	1,623	816	2,055	695	826	1,111	1,112	9,278	6.85%
9. Pipelines & Non-electrical Generating Electrical Utilities	3,046	4,303	7,482	4,975	692	5,454	1,989	12,427	40,368	29.81%
10. Forest Land	2	11	4	4	0	1	0	0	23	0.02%
12. Railroads and Airlines	770	309	953	2,282	370	728	1,080	1,076	7,567	5.59%
13. Tele-communications & Electrical Generating Equipment	125	305	304	245	83	212	118	218	1,610	1.19%
<b>TOTAL</b>	<b>11,890</b>	<b>19,738</b>	<b>17,823</b>	<b>27,276</b>	<b>6,853</b>	<b>13,747</b>	<b>13,354</b>	<b>24,732</b>	<b>135,413</b>	<b>100.0%</b>
% of Total by County	8.78%	14.58%	13.16%	20.14%	5.06%	10.15%	9.86%	18.26%	100.00%	
Source: <a href="http://mt.gov/maco/pages/04and05TaxableValuesbyCountyBYClass.xls">http://mt.gov/maco/pages/04and05TaxableValuesbyCountyBYClass.xls</a>										

to county and local governments through free use permits. Commodity price for sand and gravel sold for commercial purposes averaged \$3.68 per short ton in 2004 (USGS Minerals Yearbook, 2004).

### Recreation Use

The economic influence of recreation use is related to the amount of recreation use on public lands and related local expenditures such as gasoline, lodging, meals, and supplies. To understand the local/regional economic influence of recreation use, it is important to understand what recreation activities occur on public lands because local/regional expenditures vary depending on the type of activity, whether the recreation use is from local residents or non-local residents, and whether the activity involves overnight stays. Local/regional expenditures related to recreation use support local/regional employment and labor income (standard economic indicators). Generally, employment related to recreation and tourism tends to be seasonal and relatively low paid, with a high portion of the labor force self-employed. The recreation opportunities available in the PA play an important role in the quality of life of many local residents, as well as attracting visitors from elsewhere in the state and region. BLM public lands in the PA received an estimated 90,000 recreation visits in 2007 (BLM, RMIS, 2008). Major recreation activities on BLM lands are hunting (35 percent), OHV use (15 percent), fishing (13 percent), wildlife viewing (8 percent), and camping (7 percent). Estimated recreation visits by activity are shown in Table 3-42. Recreation and tourism is not classified or measured as a standard industrial category. Components of recreation and tourism activities are instead captured in other industrial sectors, primarily the retail sales and services sectors.

It is assumed that day use and overnight use in the PA would be similar to that found in the Dakota Prairie National Grasslands (personal conversation, John Collins, BLM 2008) where an estimated 61 percent is day use; the vast majority of which is local day use. Average spending for day and overnight use on the Dakota Prairie Grasslands is assumed to be representative of daily recreation expenditures on BLM lands within the PA where average spending per recreation visit for day trips was \$31 and average spending per overnight visit was \$123 (Stynes and White, 2005). Using these data as a proxy of expenditures per recreation visit on BLM land in the PA, it is estimated that average daily expenditures are \$73.25 and annual total expenditures are \$3.9 million.

**Table 3-42 FY 2007 Recreation Visits by Activity and Office**

Activity	Malta	Havre	Glasgow	Total	Total (%)
<b>General Recreation</b>					
Backpacking	13		945	958	.01
Bicycling- Mountain	137			137	.002
Camping	2,959	1,930	1,627	6,516	.07
Canoe/Kayaking		225		225	.002
Caving	5	600		605	.01
Driving for Pleasure	275	2,056	1,890	4,221	.05
Environmental Education		248		248	.003
Hiking, walking, running	766	1,549	165	2,480	.03
Horseback riding	293	5	1,028	1,326	.01
Nature Study	4		130	134	.001
OHV- ATV	3,598	1,388	4,193	9,179	.10
OHV- Cars, Trucks, SUVs	2,441	543	1,890	4,874	.05
Photography	385	35	148	568	.01
Picnicking	3,160	266		3,426	.04
Power Boating		168		168	.001
Rock hounding/Mineral	268		189	457	.005
Row, Float, Raft		1,065		1,065	.01
Social	1,303			1,303	.01
Target Practice			378	378	.004

Viewing- Cultural Sites	423	559		982	.01
Viewing- Other	6	75		81	.008
Viewing- Interpretive Exhibit	159			159	.001
Viewing- Scenery/Landscapes		65		65	.0006
<b>SUBTOTAL</b>				<b>39,555</b>	<b>.44</b>
<b>Fish and Wildlife Related Recreation</b>					
Archery			567	567	.01
Fishing- Freshwater	2,873	3,220	5,329	11,422	.13
Hunting- Big Game	6,964	6,759	9,589	23,312	.26
Hunting- Small Game			945	945	.01
Hunting- Upland Bird	1,284	528	1,890	3,702	.04
Hunting- Waterfowl		978	2,112	3,090	.03
Viewing Wildlife	1,942	2,464	3,242	7,648	.08
<b>SUBTOTAL</b>				<b>50,686</b>	<b>.56</b>
<b>TOTAL</b>				<b>90241</b>	<b>1.00</b>

Source: BLM Recreation Management Information System, 3/14/2008

These expenditures would be split among the following economic sectors: lodging, restaurants, groceries, gas/oil, other transportation, activities, admissions/fees, and souvenirs. The response coefficients shown in Table 3.39 estimate how total employment and total labor income respond to changes in recreation use for the economic sectors associated with recreation use.

Government revenues received from the recreation program are associated with recreation use permits issued. In Fiscal Year 2007, 11 Special Recreation Use Permits and 602 other Recreation Use permits were issued. Special Recreation Use permits for commercial activities brought in about \$8,600 and other recreation use permits brought in \$1,500. Total annual federal revenue associated with recreation use in FY 2007 was about \$10,000. None of these revenues from the Malta Field Office are distributed to the state or counties (personal conversation, Christina Miller, 3/31/2008. BLM recreation fee guidance (IM 2005-063) identifies the goal of using fee revenues at sites of collection or within the field office of collection).

### Ecosystem Restoration

Major activities associated with ecosystem restoration include treatment of invasive species and pest management, hazardous fuels treatments, and mine reclamation.

Economic effects of invasive species and their treatments are related to their influence on range productivity, wildfire risk, and attractiveness for recreation and ultimately on how these impacts affect local employment, income, and government revenues. There are direct and indirect impacts from treatments of invasive species that vary based on the species being treated and the type of treatment used. **Table 3.43** identifies the average BLM per acre cost of weed treatments and **Table 3.44** identifies the projected annual average BLM acres treated.

The cost of wildland fire suppression within the PA depends on the number and size of fires. Most wildland fires are controlled in the initial attack, when they are relatively small. However, weather conditions, terrain, vegetation, and proximity to populated areas all contribute to the cost of fire suppression. Restoration/fuel reduction efforts in Montana reduce fire hazard, improve ecological conditions of forested areas, and result in economic benefits that exceed the costs of reducing hazardous fuels (Keegan, C.E, C.E. Fiedler, and T.A. Morgan, 2002). Between 2001 and 2008, BLM fuel treatment costs within the PA averaged \$182 per acre for pre-commercial thinning of forested areas, \$43 per acre for prescribed burning of forested areas, and \$355 acre for mechanical treatments and prescribed burning of grass and shrublands (Personal communication, Jennifer Walker, BLM Lewistown F.O. 4/23/08).

**Table 3-43 Invasive Species Treatment Average Cost per Acre**

	<b>Glasgow</b>	<b>Malta</b>	<b>Havre</b>	<b>Planning Area</b>
Biological- Non Classical	-	-	23	23
Biological Classical *	50		20	30
Chemical – Ground	195	20	221	201
Chemical – Air	200	187	203.5	201.75
Other Treatments		-	525.00	531.25
Average All Treatments	148.33	248.17	198.50	198.33

**Table 3-44 Projected Average Annual Invasive Species Treatment**

	<b>Glasgow</b>	<b>Malta</b>	<b>Havre</b>	<b>Planning Area</b>
Biological- Non Classical	0	0	110	110
Biological Classical *	50	20	20	90
Chemical – Ground	85	356	254	695
Chemical – Air	285	0	90	375
Other Treatments	0	4	5	9
<b>Totals</b>	<b>420</b>	<b>380</b>	<b>479</b>	<b>1279</b>

\*Classical Biological Controls represents only releases made in any given year. Established classical biological control treats hundreds of acres each year as they establish and expand their populations. This is not reflected in Tables 3-43 or 3-44.

Source: Kenny Keever, BLM, 04/23/2008.

### **Timber Management**

Timber harvest from BLM lands within the PA is relatively small. The 10-year annual average harvest was 350 thousand board feet (350 MBF or 795 CCF) for sawtimber, firewood, post and poles, and house logs. Christmas trees are also sold. The annual average number of Christmas trees sold over a 10-year period was 76. About five percent of the sawtimber that is harvested comes from salvage sales. Annual timber revenues average \$1,190 for all products and \$553 for salvage sales. Four percent of the revenue from timber sales on public domain goes to the state, 76 percent to the Bureau of Reclamation, and 20 percent to the US Treasury. Distribution of revenue from salvage sales is different, i.e. 4 percent of revenue from timber sales on public domain goes to the state, and 96 percent goes to BLM.

### **Lands and Realty Actions**

In FY 2007, the BLM issued or renewed 627 rights-of-way for infrastructure in support of economic activities within the PA. FY2007 is representative of the annual BLM rental revenues received for federal rights-of-way. These rights-of-way covered almost 25,000 acres and the BLM received almost \$99,000 in rental income. Types of rights-of-way and amount of rental income by type are presented in Table 3.45. The most common types of rights-

of-way were for water facilities, oil and gas pipelines, and powerlines. Powerlines generated the most rental income. None of these revenues are distributed to state, county, or local governments.

**Table 3.45 Federal Rights-of-Way Revenues by Type**

Type	Rental Income	Number of R-O-W	Total Acres
Powerlines	\$32,465.89	105	4,459
Telecommunication	\$10,990.62	39	1,509
Roads/Highways	\$4,602.21	58	2214
Communication Sites	\$26,377.54	38	125
O & G Pipelines	\$22,500.44	146	2,704
O & G Roads	\$1,332.03	32	160
Material Sites	Exempt	17	189
Water Facilities	\$634.53	177	12,839
Railroads	Exempt	15	790
<b>Total</b>	<b>\$98,903</b>	<b>627</b>	<b>24,989</b>

Source: Lands & Realty Database (LR2000), September 5, 2007

Direct BLM Contributions to Area Economic Activity

BLM operations and management in the area make a direct contribution to area economic activity by employing people who reside in the area and by expending dollars on other non-personnel needs. Management of BLM lands and resources is carried out by professional and administrative employees who are stationed in BLM offices in Malta, Havre, and Glasgow. In FY 08, the three offices combined had positions for 35 permanent employees and 23 other than permanent. The BLM also has additional employees located in the Great Falls Oil and Gas Field Station (Great Falls), Lewistown Field Office (Lewistown), and the Montana State Office (Billings) who worked on minerals and resource management in the Malta Field Office. In Fiscal Year 2007 (FY07) BLM spent \$3.126 million for labor and \$2.707 million on operations within the PA. The three communities that have the largest BLM labor income are Malta (\$837,560), Havre (\$825,555), and Glasgow (\$757,180). The BLM Great Falls Oil and Gas Station also had a FY07 operations budget of about \$53,000.

BLM land management activities and public land and minerals uses are displayed in Table 3.46. A large source of these payments was payment in lieu of taxes (PILT) and mineral payments. PILT payments are made to counties to compensate for federal lands that are exempt from local property taxes. Payment amounts are based on a complex formula that considers, among other things, revenue sharing from the previous year, county population, and acreage of a county in federal ownership.

**Table -3-46 Fiscal Year 2006 Payments to Counties from BLM related land/mineral uses**

County/Area	PILT *	Grazing Fees**	Mineral Payments (Public Domain)***	Mineral Payments (Bankhead Jones Lands)****	Other Payments (Bankhead Jones Lands)*****
Montana	\$17,186,456	\$356,664	\$9,535,674		
MaFO PA	\$1,902,777	\$91,171	\$1,646,206	\$456,159	\$680

Blaine	\$339,023	\$19,106	\$209,731	\$179,583	
Chouteau	\$191,935	\$10,872	\$38,923		
Glacier	\$572,449	\$187	\$5,236		
Hill	\$26,266	\$1,400	\$65,126		
Liberty	\$30,950	\$1,975	\$26,005		
Phillips	\$276,227	\$37,478	\$1,156,210	\$222,314	\$419
Toole	\$35,361	\$3,155	\$44,805		
Valley	\$430,566	\$32,344	\$100,170	\$54,262	\$261

Source: \*USDI Fiscal Year 2007 Payments In Lieu of Taxes

\*\* BLM, 10/25/06

\*\*\* Montana Department of Revenue, Allocation of Excess Federal Royalties for FY 2006

\*\*\*\*Royalties, mineral leasing, oil and gas rents and bonuses, and mineral materials

FY2006

\*\*\*\*\*Land rent, rights-of-way fees, oil and gas pipeline rights-of-way payments FY2006

The total BLM FY 2007 budget and the budgets for major resource management program areas are displayed in Table 3.47.

**Table 3.47: Malta BLM Related Employment, and Income by Major Program Area**

Resource/Program Area	BLM-Related Jobs**	BLM-Related Income (1,000)**
General Recreation	14	\$284
Recreation related to Wildlife and Fish	18	\$378
Grazing	107	\$2,340
Timber	4	\$118
Minerals	988	\$61,705
Ecosystem Restoration	46	\$1,130
Payments to States/Counties	402	\$13,850
BLM Expenditures	99	\$4,703
Total Resource Management	1,677	\$84,508
BLM as a Percent of Total	4.67	7.08

Source: FEAST, 2008

Activities occurring on or associated with BLM land and mineral resource uses supported an estimated 1,677 jobs and \$84.5 million in labor income (FEAST/IMPLAN, 2006). BLM land/minerals use-related jobs amounted to 4.7 percent of area totals and BLM land/mineral use-related income amounted to 7.1 percent of area totals. The resource

uses generating most of the employment and income are mining (mostly oil and gas development), BLM expenditures and payments to state/local governments and livestock grazing. The economic sectors most affected are mining, government, and agriculture. Table 3-48 displays the current role of BLM-related contributions to the area economy. It is important to recognize that in some counties the contributions are greater (generally where there are more public lands and minerals and resource uses) and in some counties the contributions are less (generally where there are less public lands and minerals and resource uses).

**Table 3-48. Current Role of BLM-Related Contributions to the Area Economy**

Industry	Employment (jobs)		Labor Income (Thousands of 2008 dollars)	
	Area Totals	BLM-Related	Area Totals	BLM-Related
Agriculture	6,089	98	\$126,169	\$1,966
Mining	1,136	644	\$84,350	\$52,919
Utilities	248	7	\$25,427	\$741
Construction	1,496	2	\$47,041	\$53
Manufacturing	497	6	\$15,346	\$177
Wholesale Trade	801	25	\$31,642	\$997
Transportation & Warehousing	1,661	21	\$97,853	\$780
Retail Trade	3,103	92	\$74,307	\$2,126
Information	440	7	\$18,970	\$289
Finance & Insurance	1,119	27	\$34,787	\$801
Real Estate & Rental & Leasing	997	20	\$36,806	\$718
Prof, Scientific, & Tech Services	828	30	\$26,036	\$901
Mgmt of Companies	6	0	\$263	\$15
Admin, Waste Mgmt & Rem Serv	1,427	40	\$20,222	\$748
Educational Services	382	11	\$6,224	\$169
Health Care & Social Assistance	2,548	79	\$81,500	\$2,524
Arts, Entertainment, and Rec	700	18	\$8,102	\$194
Accommodation & Food Services	2,516	84	\$35,228	\$1,085
Other Services	2,028	52	\$26,239	\$688
Government	7,864	415	\$397,397	\$16,617

Total	35,886	1,677	1,193,907	84,508
BLM as Percent of Total	---	4.67%	---	7.08%

The response coefficients shown in Table 3.39 indicate how total local employment and total local labor income respond to a \$1000 change in local BLM expenditures.

## 4.1.1 Economics

### Methodology, Assumptions, and Incomplete Information

- The analysis area for the economic analysis consists of the eight Montana counties that include lands managed by the Malta FO: Glacier, Toole, Liberty, Choteau, Hill, Blaine, Phillips, and Valley counties.
- Potential economic impacts are assessed using the Forest Economic Analysis Spreadsheet Tool (FEAST) developed by the USDA Forest Service Inventory and Monitoring Institute (IMI) in Fort Collins, Colorado. This model uses a Microsoft Excel workbook as the interface between user inputs and data generated using the IMPLAN input-output modeling system.
- The FEAST analysis assesses the economic impacts of the resource outputs projected under each alternative. Resource outputs in this context are the amount of a resource (e.g., timber volume, AUMs, recreation visits, etc.) that would be available for use under each alternative. Average annual resource outputs were projected by resource specialists for each alternative for the 20-year planning period based on the best available information and professional judgment. Impacts to economic well-being are measured in terms of employment and labor income.
- Employment and labor income estimates developed for this analysis include direct, indirect, and induced economic effects. Direct employment would, for example, be generated in the logging and sawmill sectors. Additional employment would be generated as the affected logging and sawmill operations purchase services and materials as inputs (“indirect” effects) and employees spend their earnings within the local economy (“induced” effects).
- The benefit transfer method was used to estimate non-market economic values related to recreation opportunities by transferring available information from studies already completed in other locations and/or context. Loomis (2005) summarizes more than 30 years of literature on net economic value of outdoor recreation on public lands. The report provides average net willingness to pay or consumer surplus per pay for 30 recreation activities at the national level.
- Wildland fire suppression costs are not provided by alternative because it is not possible to predict the level of non-prescribed wildland fire that would occur under any of the alternatives.

A number of assumptions were made to facilitate the analysis of the alternative management actions. These assumptions set guidelines and provide reasonably foreseeable levels of development that would occur within the Planning Area over the analysis period (20 years). These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative and described in Chapter 2. If a resource heading does not appear in the following sections, it is because no assumptions were made.

## GENERAL ASSUMPTIONS

- Sufficient funding and personnel would be available for implementation of any alternative.
- Implementation of all alternatives would be in compliance with all valid existing rights, federal regulations, bureau policies, and other requirements.
- Appropriate maintenance would maintain the functional capability of all developments.
- The discussion of impacts is based on the best available data. Knowledge of the Planning Area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used to infer environmental impacts where data is limited.

## Resource Assumptions

### Demographic and Economic

- The planning area population trends will continue as described in Chapter 3.
- Regional economic impacts are estimated based on the assumption of full implementation of each alternative. The actual changes in the economy would depend on individuals taking advantage of the resource-related opportunities that would be supported by each alternative. If market conditions or trends in resource use were not conducive to developing some opportunities, the impact on the economy would be different than estimated herein.
- Resource specialists projected annual resource outputs are based on the best available information and professional judgment. The purpose of the economic analysis is to compare the relative impacts of the resource management alternatives and should not be viewed as absolute economic values.
- When bison grazing occurs, one AUM for bison is equivalent to one AUM of cattle grazing.
- All sawtimber harvested within the analysis area would be logged by logging contractors, not households. The logs would be processed at mills outside of the PA.
- The ratios of harvest to jobs and income used to assess the impacts of the alternatives are based on statewide ratios developed for Montana by the University of Montana.
- Baseline recreation demand is assumed to increase by 0.5 percent per year.
- Recreation visits are assigned to different user groups based on primary use. This does not account for the fact that recreation visitors may engage in one or more activity as part of a visit. Overnight visitors, who camp on Malta Field Office lands, for example, are identified as camping only even though they may also be pursuing a number of other different recreation activities.
- Projected recreation visits and expenditures are distributed among different types of visitors based on the results of National Visitor Use Monitoring surveys conducted for the Dakota Prairies National Grasslands.

- The ratios of recreation visits to jobs and income used to assess the impacts of the alternatives are based on national ratios developed through the Forest Service's National Visitor Use Monitoring program.
- The economic analysis does not include labor contributions from the BLM employees located in Great Falls, Billings, Lewistown, or Miles City since they do not live in the planning area and very little of their labor income is spent within the planning area economy. However, BLM operations expenditures from these offices for Malta Field Office minerals and resource management related purchases are included in the BLM Malta budget since these dollars would be spent within the planning area economy. Estimated BLM budgets associated with each alternative is listed in Table 4.1.
- The number of permanent and other than permanent BLM employees who would work on minerals and resource management would not vary by alternative.

#### Anticipated Levels of Use (Basis for Impact Analysis)

**Table 4.1 Estimated Annual Livestock Grazing\* by Alternative**

<b>Glass of Livestock</b>	<b>Current Management**</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Cattle and Horses (AUMs)	352,750	352,750	352,750	352,750	352,750
Sheep and Goats (AUMs)	none	none	none	none	none
Section 3 AUMs	336,333	336,333	336,333	336,333	336,333
Section 15 AUMs	16,269	16,269	16,269	16,269	16,269
Total Federal Revenues (\$1,000)***	476	476	476	476	476
Total Local Revenues (\$1000)****	68	68	68	68	68
Cattle and Horses (HMs)	430,506	430,506	430,506	430,506	430,506
Sheep and Goats (HMs)	none	none	none	none	none
BLM Budget (\$1,000)	1,742	1,742	1,742	1,742	1,742

\*1 HM (Cattle and Horses) = 0.78 AUMs. Therefore 1.28 x Total AUMs = Total HMs.

1 HM (Sheep and Goats) = 0.2 AUMs. Therefore 5 x Total AUMs = Total HMs.

\*\* Source: Rangeland Administration System: Annual average permitted use (2005-2007) from Steve Zellmer 4/23/08

\*\*\*Grazing Fee = \$1.35/AUM (2008). Total revenue = Total AUMs x \$1.35.

\*\*\*\*(Sec. 3 AUMs x \$1.35 x 0.125) + (Sec. 15 AUMs x \$1.35 x 0.5) = Total Local Revenues

**Table 4.2 Estimated Annual Federal Mineral Production and Activity by Alternative**

<b>Commodity/ Activity</b>	<b>Current Management **</b>	<b>Alt. A</b>	<b>Alt. B</b>	<b>Alt. C</b>	<b>Alt. D</b>
New Leases (Acres)	142,160	549,010	549,010	549,010	549,010
Existing Acres Leased	1,628,635	1,628,635	1,628,635	1,628,635	1,628,635
Natural Gas production (MCF)*	18,254,938	18,930,371	18,912,116	19,021,645	19,094,665
Natural Gas royalties (\$1,000) @ \$9/MCF	164,294	170,373	170,209	171,195	171,852
Oil production (bbl)*	167,687	173,891	173,724	174,730	175,401
Oil royalties (\$1,000) @\$115/bbl	19,284	19,998	19,978	20,094	20,171
Oil/Gas Wells (dry holes)	7	7	8	8	9
Oil/Gas Wells (Producers)	50	50	49	57	62
Oil/Gas Budget (\$1,000)	70	70	70	70	70
Sand/Gravel produced (short tons)	38,480	38,480	38,480	38,480	38,480
Sand/Gravel Royalties (\$1,000) (1/3 is free use to counties)	16	16	16	16	16
Gold produced (short tons)	0	0	0	0	0
(Bentonite) (short tons)	0	65,000	65,000	65,000	65,000
Mining Law Budget (\$1,000)**	159	159	159	159	159

\*Source: Stacey Brown, MMS, 6/23/08. 2007 federal production was provided by MMS. The oil/gas RFD estimates that BLM would manage 2349 producing wells out of a total 11705 total. BLM manages 20 percent of the total producing wells in the PA. Based on the projected number of producing wells in the RFD for each alternative, the percent change from current levels in the number of producing wells was estimated to be 3.7 % (Alt. A), 3.6 % (Alt. B), 4.2 % (Alt. C), 4.6 % (Alt. D). These percentage changes were multiplied times the 2007 level of production for oil and gas (from Chapter 3 table) to estimate the levels of oil and gas production for each alternative.

\*\*Includes 1310, 1640, 1990

**Table 4.3 Estimated Recreation Visits by Alternative**

Activity		Alt. A	Alt. B		Alt. C		Alt. D	
	Consumer Surplus per visit*		% change**		% Change **		% Change **	
<b>General Recreation</b>								
Backpacking	\$38.53	958	2	977	5	1,006	5	1,006
Bicycling- Mountain	184.48	137	0	137	2	140	2	140
Camping	34.72	6,516	5	6,842	10	7,168	12	7,298
Canoe/Kayaking	67.70	225	0	225	0	225	5	236
Caving	56.35	605	0	605	0	605	0	605
Driving for Pleasure	23.58	4,221	7	4,516	5	4,432	3	4,348
Environmental Education	48.46	248	2	253	2	253	2	253
Hiking, walking, running	38.53	2,480	5	2,604	7	2,654	7	2,654
Horseback riding	48.46	1,326	2	1,353	7	1,419	7	1,419
Nature Study	23.58	134	10	147	5	141	5	141
OHV- ATV	22.81	9,179	2	9,363	10	10,097	12	10,280
OHV- Cars, Trucks, SUVs	69.74	4,874	5	5,118	10	5,361	10	5,361
Photography	23.58	568	10	625	5	596	2	579
Picnicking	28.27	3,426	2	3,495	5	3,597	5	3,597
Power Boating	53.68	168	0	168	0	168	2	171
Rock hounding/Mineral Collection	56.35	457	2	466	5	480	5	480
Row, Float, Raft	67.70	1,065	0	1,065	0	1,065	5	1,118
Social Gathering/Festival/Concert	34.72	1,303	0	1,303	5	1,368	7	1,394
Target Practice	48.55	378	0	378	2	386	2	386
Viewing- Cultural Sites	23.58	982	5	1,031	2	1,001	2	1,002
Viewing- Other	23.58	81	0	81	0	81	0	81
Viewing- Interpretive	23.58	159	0	159	2	162	5	167

Exhibit								
Viewing- Scenery/Landscape	23.58	65	10	72	5	68	5	68
SUBTOTAL		39,555		40,982		42,473		42,784
<b>Fish and Wildlife Related Recreation</b>								
Archery	48.55	567	10	624	7	607	5	595
Fishing- Freshwater	49.57	11,422	5	11,993	5	11,993	7	12,222
Hunting- Big Game	48.55	23,312	10	25,643	7	24,944	5	24,478
Hunting- Small Game	48.55	945	5	992	3	973	2	964
Hunting- Upland Bird	48.55	3,702	10	4,072	7	3,961	5	3,887
Hunting-Waterfowl	48.55	3,090	10	3,399	7	3,306	5	3,245
Viewing Wildlife	37.24	7,648	10	8,413	5	8,030	3	7,877
SUBTOTAL		50,686		55,136		53,814		53,268
TOTAL		90241		96,118		96,287		96,052
Consumer Surplus (\$1,000)***		4,108		4,381		4,380		4,365

- Source: Updated Outdoor Recreation Use Values on National Forests and Other Public Lands, John Loomis, 2005
- \*\* Percent change from current level from all BLM resource management actions and resulting land uses. This does not reflect the 0.5 % per year natural increase expected and discussed in the Draft RMP.
- \*\*\*2008 dollars

**Table 4.3.1 Percent of Use on National Grasslands  
(Nonprimary use added to local day use)**

Forest Administrative Unit	Non-Local Segments			Local Segments			Non Primary
	Day	OVN-NF	OVN	Day	OVN-NF	OVN	
Dakota Prairie Grasslands	4	6	14	57	1	18	

Source: Stynes, Daniel J. and Eric M. White, Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005, Appendix A-2, pg. 26, 27.

**Table 4.3.2 Recreation: FEAST Resource Data Entry**

Row	Description	% Use**	A	B	C	D
General Recreation						
	Total *		39,555	40,982	42,473	42,784

32	NL-Day Trips	4	1,582	1,639	1,699	1,711
33	NL-OVN-BLM	6	2,373	2,459	2,548	2,567
34	NL-OVN	14	5,538	5,737	5,946	5,990
35	L- Day trips	57	22,546	23,360	24,210	24,387
36	L-OVN-BLM	1	395	410	425	428
37	L-OVN	18	7,120	7,377	7,645	7,701
Fish and Wildlife Related Recreation						
	Total *		50,686	55,136	53,814	53,268
54	NL-Day Trips	4	2,027	2,205	2,153	2,131
55	NL-OVN-BLM	6	3,041	3,308	3,229	3,196
56	NL-OVN	14	7,096	7,719	7,534	7,458
57	Local Day Trips	57	28,891	31,428	30,674	30,363
58	L-OVN-BLM	1	507	551	538	533
59	L-OVN	18	9,123	9,924	9,687	9,558
60	General hunting data		31,616	34,730	33,791	33,169
65	General fishing data		11,422	11,992	11,993	12,222

\*Source: Table R-2

\*\*Source: Table R-4 below

**Table 4.3.3 Public Revenues from Recreation Related Activities**

Row	Description	Current	A	B	C	D
	Special Recreation Permits (SRPs)*	\$8,588	\$8,588	\$8,588	\$8,588	\$8,588
	Recreation Use Permits (602 RUPs)**	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
55	Total Recreation Revenues*	\$10,088	\$10,088	\$10,088	\$10,088	\$10,088

Source: \*BLM, Management Information System, FY2007, March 28, 2008

\*\* Jon Collins, June 4, 2008

Note: Recreation revenues are not distributed to the state or counties

**Table 4.4: Anticipated BLM Budget for Each Alternative by Program Area (\$1,000)**

Resource/Program	FY 2007	Alternative	Alternative	Alternative	Alternative
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Area	Budget*	A	B	C	D
General Recreation	126	126	126	126	126
Recreation related to Wildlife and Fish	777	777	777	777	777
Grazing	1,742	1,742	1,742	1,742	1,742
Timber	131	131	281	281	281
Minerals	483	483	483	483	483
Weeds	254	254	254	254	254
Fire/Fuels	260	260	1,192	1,192	1,192
Ecosystem Restoration	2,479	2,479	2,479	2,479	2,479
Payments to States/Counties					
PILT	1,903	1,903	1,903	1,903	1,903
Planning	1,167	70	70	70	70
Soil, Water, Air	540	540	540	540	540
Lands, Realty	147	147	147	147	147
Cultural	123	123	153	153	153
Other (Admin.)	699	699	699	699	699
BLM Expenditures **	6,456	5,359	6,464	6,464	6,464
Total Resource Management					

\*Source: BLM, MIS, 2008

\*\*Does not include payments for ecosystem management (mine reclamation and water treatment), Payments to State/Counties, or PILT

BLM categories not in FEAST Table

**Table 4.5 BLM Employment by Alternative**

Employees	Current (2007)	Alt. A	Alt. B	Alt. C	Alt. D
Permanent	35	35	35	35	35
Other than Permanent	23	23	23	23	23

**Table 4.6 Ecosystem Restoration - Annual Treatments by Alternative**

Treatment	Current (2007)	Alt. A	Alt. B	Alt. C	Alt. D	Cost/unit
Mechanical Treatments	237	237	391	391	391	\$718

(acres)*						
Cost Mechanical Treatments (\$1,000)	131 7% BLM	131 7% BLM	281 7% BLM	281 7% BLM	281 7% BLM	
Cost Mechanical Treatments non-BLM (\$1,000)	122	122	261	261	261	
Prescribed Burning (forest acres)*	43	43	1,033	1,033	1,033	\$942
Cost Prescribed Burning-forest (\$1,000)	41 100% BLM	41 100% BLM	973 100% BLM	973 100% BLM	973 100% BLM	
Prescribed Burning and Mechanical (grassland acres)*	355	355	355	355	355	\$24
Cost Prescribed Burning/Mechanical-grasslands (\$1,000)	9 100% BLM	9 100% BLM	9 100% BLM	9 100% BLM	9 100% BLM	
Invasive Species (acres)**	1,279	1,279	1,279	1,279	1,279	\$198/acre
BLM internal Cost Invasive Species Treatments (\$1,000)	94	94	94	94	94	
Cost Invasive Species Treatments non-BLM (\$1,000)	160	160	160	160	160	
Mine Reclamation and water treatment Cost (\$1000)***	\$2,479	\$2,479	\$2,479	\$2,479	\$2,479	\$2,479
Road Decommissioning	0	0	0	0	0	0

Source: \*BLM, Jennifer Walker, 5/07/08; \*\*BLM, Kenny Keever, 4/23/08, \*\*\*BLM, Christopher Rye, 5/12/08

**Table 4.7 Annual timber harvest by Alternative**

<b>Treatment</b>	<b>Current (2007)</b>	<b>Alt. A</b>	<b>Alt. B</b>	<b>Alt. C</b>	<b>Alt. D</b>
Sawtimber, fuel wood, post/poles, & house logs, (CCF)	350 MBF= 795 CCF 175 acres	795	1,507	1,507	1,507
Personal use permits( fire wood, Xmas Trees, etc)	138	138	138	138	138
Timber Revenues- all products	\$1,190	\$1,190	2,300	2,300	2,300

Salvage Sales	\$553	\$600	600	600	600
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\*Source: Bruce Reid 5/1/08

### Lands and Realty Related Activities

BLM receives about \$99,000 in R-O-W rental income under current management and this would continue under Alternative A. It is assumed that annual rental revenues would remain about the same with all alternatives. No new proposals for major powerlines or roads/highways that would cross BLM lands are anticipated.

BLM has received a preliminary application for right-of-way grant for one 36-inch crude oil pipeline running from Canada to Texas. The nearly 1,400 mile crude-oil pipeline is proposed to cross through the planning area, although less than 42 miles are expected on BLM lands in Montana and it is assumed that about half of this would be in the PA. It is assumed that local/regional economic impacts would be mostly related to local expenditures. These would be related to lodging, meals, and maybe some vehicle fuel purchases. Total local expenditures are assumed to be total number of labor days for surveys, inventories, clearances, and construction per miles of pipeline x daily per diem x total number of miles of pipeline on public lands in the PA. Labor expenditures i.e., wages and salaries, would likely be non-local and would not be included in the local input/output analysis. At the time of this analysis specific data are not available for this project and will be included later. Annual R-O-W rentals would amount to an estimated \$1,000. This will be analyzed under all alternatives.

The basis for impact analysis also includes the development of one wind farm that would produce 50 MWs of electricity; of which about 80 percent would be on BLM public lands. An estimated 110 workers would be involved in the engineering and design, road and foundation preparation, substation and transmission line construction, wind turbine assembly and erection during the two-year construction period. Construction in the first two years would create an estimated 66 local jobs and local labor income of \$1.898 million; after that operation and maintenance would generate 4 local jobs and annual local income of \$505,000. Right-of-way rental would amount to an estimated \$95,000.

**Table 4.8 Estimated Annual Federal, State, and Local Revenues by Alternative (\$1,000)**

Resource Use	Current Mngt**	Alt. A	Alt. B	Alt. C	Alt. D
Federal					
Livestock grazing	476	476	476	476	476
Oil/gas leasing	3,542	4,355	4,355	4,355	4,355
Oil production	2,411	2,500	2,497	2,512	2,521
Gas production	20,537	21,297	21,276	21,399	21,481
Sand/gravel production	10	10	10	10	10
Special Recreation Permits (SRPs)	9	9	9	9	9
Recreation Use Permits	2	2	2	2	2

(RUPs)					
ROW rents	99	100	100	100	100
Timber sales	2	2	3	3	3
Wind Energy Rent	0	95	95	95	95
Total	27,088	28,846	28,823	28,961	28,952
State/Counties					
Livestock grazing (Sec 3)	58	58	58	58	58
Livestock Grazing (Sec. 15)	11	11	11	11	11
Oil production	1,206	1,250	1,249	1,256	1,261
Gas production	10,269	10,649	10,638	10,700	10,741
PILT	1,903	1,903	1,903	1,903	1,903
Timber sales	<1	<1	<1	<1	<1
Wind Energy		4	4	4	4
Total	13,447	13,875	13,863	13,932	13,978

## Analysis

### **Impacts Common to All Alternatives**

The economic analysis assesses the economic effects of the direct use of resources in terms of jobs and income. This type of analysis does not include other types of economic value that may be associated with unique natural resources and protected areas. These types of values, often referred to as non-market values, include natural amenities and quality of life, non-use values, bequest values, and ecosystem services.

#### **Non-Market Values**

Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the American West and elsewhere (Rudzitis, 1999). While natural amenities and life quality do not directly generate income in the same sense as, for example, a sawmill or a tourist lodge, they do act to attract and keep residents, and may attract new businesses. Open spaces, scenery, and protected lands are important to residents of Montana and throughout the Rocky Mountain west and may contribute to healthy economies and lifestyles (Sonoran Institute 2003). This relationship is, however, difficult to quantify as is assessing the effects of different management actions on the economic activities that these amenities are believed to indirectly generate.

#### **Non-Use Values**

Non-use values, represent the value that individuals assign to a resource independent of the use of that resource. These types of values, which include existence, option, and bequest values, are usually measured via surveys that ask people how much they would be willing to pay to have a particular area preserved or designated as wilderness. These values represent the value that individuals obtain from knowing that a resource exists, knowing that it would be available to use in the future, and knowing that it would be left for future generations. Wilderness has been the subject of numerous non-use studies, usually conducted for specific natural areas, and willingness-to-pay estimates for protection or designation have identified a wide range of values (Krieger 2001; Loomis and Richardson 2001).

Three different methods of ecosystem valuation were used in this analysis. First, market prices were used to gauge revealed willingness to pay for livestock grazing on public lands. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated \$5.19 million for each alternative. The second method of ecosystem valuation was the benefit transfer method which estimates economic values by transferring existing recreation benefit estimates from studies already completed for another location or issue. Estimated average net willingness to pay, or consumer surplus related to recreation on public lands ranged from \$4.1 million (Alternative A) to \$4.38 million (Alternative B). Hedonic pricing method was the third method of ecosystem valuation used. This was used to measure the impact of coalbed methane wells on property values. The study concluded that the location of a well at the time of sale influences the selling price. Properties with wells on them had an estimated 22 percent reduction in selling price.

#### Ecosystem Services

No attempt has been made to assign monetary values to the ecosystem services, eg. benefits associated with watershed processes, soil stabilization and erosion control, improved air quality, climate regulation and carbon sequestration, and biological diversity, that would be provided because these values are difficult to quantify at this analysis level. In addition to the difficulties involved in developing accurate estimates of these values, the impacts of project alternatives are rarely quantified in the type of units that would allow these values to be assigned. However, the fact that no monetary value is assigned to ecosystem services in this document does not lessen their importance in the decision making process.

The potentially affected local economy is characterized for the PA counties in the Affected Environment portion of this document (Chapter 3). None of the alternatives would be expected to affect economic diversity (the number of economic sectors) or economic dependency, which occurs when the local economy is dominated by a limited number of industries. While the alternatives have the potential to affect local businesses and individuals, the contribution of Malta Field Office-related activities to the local economy and the relative differences between the alternatives would not be large enough to have measurable effects on economic diversity or dependency. This is also the case with respect to economic stability, which is typically assessed in terms of seasonal unemployment, sporadic population changes, and fluctuating income growth rates. Malta Field Office-related activities include logging and recreation, which are characterized by seasonal employment, but none of the alternatives would be expected to affect existing trends in these or other industries.

Hazardous fuel treatment costs are included for the purposes of this analysis in the total BLM expenditures identified by alternative (Table 4-6). Projected annual fuel treatment costs range from approximately \$181,000 under Alternative A to approximately \$1.26 million under Alternatives B, C, and D. Other potential wildland fire-related costs (such as property loss, lost revenues, and increased suppression costs) are difficult to project and are unknown. It is commonly accepted that fire suppression costs and risk to life and property should be less on wildland fires that occur where hazardous fuels have been treated compared to areas where fuels have not been reduced. For example, fires generally burn hotter, flame length is higher, and fires in tree canopies are more likely in non-treated areas.

The alternatives involve different approaches to, and levels of, vegetation treatment, as well as different approaches to wildland fire management. It is anticipated that fuels treatments on public lands within the PA would contribute to fuels conditions that would have less resistance to wildland fire control should an unplanned fire get started in treated areas. This would tend to reduce the threat to life and property. It is not, however, possible to project the level of non-prescribed wildland fire that would occur under any of the alternatives. Based on the level of hazardous fuels treatments for each alternative, total wildland fire suppression costs for fires in the Malta Field Office would be higher for Alternative A and lower for Alternatives B, C, and D.

This section summarizes economic impacts by BLM program area that are unlikely to vary substantially by alternative.

#### Grazing Management

Livestock grazing on BLM-managed land in the eight-county PA would continue to involve approximately the same number of operators. Less than half of the farms/ranches in the Planning Area would hold grazing permits. The amount of livestock grazing would not change among the alternatives and BLM would continue to provide about 17 percent of the total forage needed to feed livestock in the Planning Area. The dependency on BLM forage for each county would remain relatively unchanged from what is displayed in Table 3.37. The economic dependency of livestock producers on BLM forage would also remain unchanged. However, often BLM forage would continue to provide a critical element of some livestock producers' complement of grazing, forage, and hay production. All alternatives would continue to authorize average annual grazing of approximately 352,750 AUMs and support approximately 110 jobs and \$2.34 million in labor and proprietor's income (Table 4.9). Farm/ranch related labor and proprietor's income would continue to account for approximately one percent of total income in the eight-county study area and less than three percent of employment (IMPLAN 2006). Approximately 95 percent of the AUMs sold within the Malta Field Office would continue to be section 3 permits of which 12.5 percent of revenues are distributed to the state and local counties; 5 percent of the AUMs are section 15 permits of which 50 percent of revenues are distributed to state and local counties. Annual federal revenues from livestock grazing fees would continue to be about \$476,000 annually, of which about \$70,000 would be distributed to the counties. The difference between market prices for livestock grazing and the fee charged by the BLM represents an annual consumer surplus to the grazing permittees of an estimated \$5.19 million for each alternative. The employment and labor/proprietor's income response coefficients would remain relatively unchanged, i.e. for every 1,000 HM change in livestock

grazing on public lands there would be a corresponding change of 0.25 jobs and \$5,436 in labor/proprietor's income.

### Minerals Management

Federal mineral estate leased for oil and gas exploration, development, and production would increase from the current level of over 1,900 federal oil and gas leases covering 1.629 million acres to an estimated 2.178 million acres when those areas that are currently deferred from leasing are made available for leasing upon completion of the RMP revision. Annual revenues from leasing federal minerals for oil and gas development would increase from the current \$3.5 million to an estimated \$4.4 million. About 70 percent of the natural gas production from federal minerals would continue to occur in Phillips County and almost 70 percent of the oil production from federal minerals would continue to occur in Toole County. The annual amount of sand/gravel produced (about 38,500 short tons per year) and royalties from this production (about \$16,000) would remain relatively unchanged. Bentonite production (about 65,000 short tons/year) would start up under all alternatives. Employment and income impacts displayed in tables 4.9 and 4.10 under the minerals program include the effects of sand/gravel and bentonite production. Under all alternatives, minerals related activities on federal minerals would also continue to be the largest contributor to local employment and income of all the major BLM land/minerals uses. The employment and labor/proprietor's income response coefficients would remain relatively unchanged, i.e. for every 1,000 MCF of natural gas production there would be a corresponding change of 0.05 jobs and \$2,868 in labor income; for every 1,000 bbl of oil production there would be a corresponding change of 0.58 jobs and \$36,642 in labor income; for every 1,000 short tons of sand and gravel production there would be a corresponding change of 0.05 jobs and \$2,231 in labor income; for every 1,000 short tons of bentonite production there would be a corresponding change of 0.66 jobs and \$30,429 in labor income.

### Recreation Use

Revenues from recreation use permits, campground receipts, and outfitter and guide receipts would be similar (approximately \$10,000 per year) for all alternatives.

### Lands and Realty

Existing use authorizations, e.g. rights-of-way, permits, and lease rentals would continue to generate an estimated \$100,000 of revenue annually for the federal government and annual Payments in Lieu of Taxes (PILT) from the federal government to the eight counties would continue to be approximately \$1.903 million with all the alternatives. Since no specific major land tenure adjustments within the planning area are pending, it is not possible to determine how PILT and local property taxes might be affected.

It is anticipated that one 50 MW wind energy development would occur, 80 % of which would occur on public lands. This would occur for all alternatives. An estimated 110 workers would be involved in the engineering and design, road and foundation preparation, substation and transmission line construction, wind turbine assembly and erection during the two-year construction period. Construction in the first two years would create an estimated 66 local jobs and local labor income of \$1.898 million; Total annual employment associated with the wind energy development would be less than 10 jobs and annual labor income would be about

\$500,000. This development would also generate an additional \$95,000 annually in federal revenues. Annual employment associated with maintenance and operation of other lands/realty R-O-Ws would be negligible.

BLM has received a preliminary application for right-of-way grant for one 36-inch crude oil pipeline running from Canada to Texas. The nearly 1,400 mile crude-oil pipeline is proposed to cross through the PA, although less than 42 miles are expected on BLM lands in Montana and it is assumed that about half of this would be in the PA. It is assumed that local/regional economic impacts would be mostly related to local expenditures. These would be related to lodging, meals, and maybe some vehicle fuel purchases. Total local expenditures are assumed to be total number of labor days for surveys, inventories, clearances, and construction per miles of pipeline x daily per diem x total number of miles of pipeline on public lands in the PA. Labor expenditures i.e., wages and salaries, would likely be non-local and would not be included in the local input/output analysis. At the time of this analysis specific data are not available for this project and will be included later. Annual R-O-W rentals would amount to an estimated \$1,000.

#### Ecosystem Management

Those elements of ecosystem management that would not change among the alternatives include mine reclamation/water treatments and invasive weed treatments. Annual ecosystem management would continue to include mine reclamation and water treatment costs (\$2.479 million). All alternatives would continue to support approximately 33 jobs and \$0.8 million in labor and proprietor's income within the local economy. Mine reclamation and water treatment related labor and proprietor's income would continue to account for less than one percent of total employment and income in the eight-county study area. Invasive species treatments would occur on about 1,280 acres per year. About two-thirds of these treatments would be completed through agreements/contracts. These would support about 8 jobs and \$200,000 in labor/proprietors income per 1,000 acres treated. The remaining weed treatments would be done by BLM employees. These treatments would support about 1 job and \$59,000 in labor income per 1,000 acres treated. Other aspects of ecosystem management would vary by alternative and are addressed below.

#### Timber and Forest Product Production

Each of the alternatives would continue current federal government revenues, approximately \$2,000-3,000 annually, from the product sales within the eight-county area, as 4 percent of non-stewardship timber receipts are returned through the state to the counties where they are generated

#### Other Impacts

Malta Field Office expenditures for BLM employee salaries and program operations would continue to be about \$5.83 million annually. The BLM offices within the planning area would continue to employ about 58 employees (35 permanent and 23 other than permanent). Total labor expenditures for FY 2007 Non-salary expenditures are purchases made in support of resource programs and operations and include items such as contracts, gasoline, diesel, ammunition and explosives, animal feed, computer equipment, and so on. Under all alternatives, economic diversity indicated by the number of economic sectors would remain relatively

unchanged, though shifts in emphasis could occur. Estimated costs to local governments would also remain unchanged, i.e. demand for services and infrastructure would not change.

The dependency of the local economy on livestock industry, timber production, mining, and recreation activities would not be affected by BLM resource management. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

BLM management that would generate the most employment and labor/proprietor's income would be mineral development (mostly oil and gas development) and payments to state/counties. The industrial sectors within the local economy that would be most influenced by these BLM land and mineral uses would be mining, government, and agriculture. Employment and labor and proprietor's income by major industry are shown for each alternative in tables 4.8 and 4.9. The employment, income, and revenue effects of BLM resource management would be spread unequally among the counties and communities within the PA.

#### Global Climate Change

Under all alternatives, the land uses and activities on BLM public lands would contribute an imperceptible amount to Global Climate Change (GCC). However, national/international policies and global policies and practices that contribute to continued growth of emissions would be expected to ultimately cause physical and economic impacts (Congressional Budget Office (CBO), 2003). Similarly, current and future climate changes could influence land uses and resource productivity, e.g. recreation use, livestock grazing, timber harvest, ecosystem restoration, etc. related to water resources, agricultural practices and production, forest health and productivity, disease risk, and ecosystem makeup (EPA, 1997). These changes could directly and indirectly influence economic production, employment, income, wealth, markets, trade, and technologies (Holdren, 2008).

The Congressional Budget Office reports that the potential effects of any particular amount or rate of climate change over the next few centuries are uncertain. Research on the connection between climate and economic well-being yields ambiguous conclusions and is related to such things as world population growth, economic growth, energy and land intensive activities, and how much energy is used for these activities. Generally, policies that deal with GCC inevitably affect the distribution of resources. Inaction benefits people who are alive today while potentially harming future generations. National policy options that include incentive based approaches are generally more cost-effective than direct controls as a means of regulating greenhouse gas emissions (CBO, 2003).

#### Impacts under Alternative A

Estimates of the levels of employment and labor income that would be supported by Alternative A are based on anticipated land and mineral uses, resource outputs, and projected BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in **Table 4-9** and **Table 4-10**, respectively.

**Minerals:** Annual oil and gas production from federal mineral estate would increase by an estimated 3.7 percent over current levels. Annual federal revenues associated with oil and gas

production related activities on federal minerals would increase from current estimated levels (\$22.9 million) to an estimated \$23.8 million. From this, revenues distributed to the state and counties would be an estimated \$11.9 million. Alternative A would result in the estimated average annual production of 18.930 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (Table 4-2). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,020 local jobs and an estimated \$61.7 million in local labor and proprietor's income. (Table 4-9 and Table 4-10). Nearly 60 percent of the employment and almost three fourths of the labor/proprietors income supported by BLM land uses in the PA would be directly or indirectly tied to mineral activities. Total annual federal revenues from mineral leasing, production, and sales would be an estimated \$28.2 million; of which an estimated total of about \$11.9 million would be distributed to the state and counties. GIS analysis indicates that there are currently about 514 residential structures within the PA on lands with federal minerals that have high or moderate potential for oil and gas development (Keefer, 2008). The location of a well near any of these properties at the time of a residential sale could reduce the net value of the residential property by an average of 22 percent.

**Recreation:** The estimated 90,200 recreation visits, including fish and wildlife-related recreation activities, would account for less than four percent of all the local jobs and less than two percent of the labor income that could be supported by Malta Field Office activities. Alternative A would support approximately 60 jobs and \$1.3 million in labor income (**Table 4-9** and **Table 4-10**). The willingness to pay for recreation opportunities would represent an estimated consumer surplus of \$4.11 million annually.

**Government:** BLM expenditures would support approximately 90 jobs and \$3.9 million in labor income (**Table 4-9** and **Table 4-10**) in the local economies.

**Ecosystem Management:** Annual ecosystem management would continue to include mine reclamation and water treatment costs (\$2.479 million), mechanical treatment costs (\$131,000), prescribed burning of forested areas (\$43,000), mechanical treatments and prescribed burning of grass/shrubs (\$9,000), and invasive species treatments (\$253,000). Mine reclamation, water treatment, 90 percent of pre-commercial thinning, and 63 percent of invasive species treatments are contracted out or paid for through cooperative agreements. Annual timber harvest performed by private businesses would continue to produce about 795 CCF of sawtimber. About 138 personal use permits (Christmas tree permits, firewood permits, etc.) would also be issued annually. Annual revenues from timber and salvage sales would be an estimated \$2,000. Ecosystem management and timber management would continue to support approximately 46 total jobs and \$1.1 million in total labor and proprietor's income in the local economy (**Tables 4.9** and **4.10**).

**Conclusion:** Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative A would be about 1,720 jobs and \$86.3 million, respectively (**Tables 4.9** and **4.10**). These would reflect increases of 2.4 percent and 2.1 percent respectively over current levels. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about \$28.8 million per year. Annual payments to the State of Montana and to counties would be approximately \$13.9 million, most of which would be related to oil

and gas production and PILT payments. Most of the economic impacts from BLM management and land uses would continue to occur in Phillips, Valley, and Blaine counties where most of the BLM lands and minerals are located. The demographic and economic trends that are described in Chapter 3 to provide context for impacts would be expected to continue.

**Table 4.9 Employment by Program by Alternative (Average Annual)**

Resource	Total Number of Jobs Contributed				
	Current	Alt A	Alt B	Alt C	Alt D
Recreation	26	26	26	28	28
Wildlife and Fish	35	35	38	37	36
Grazing	107	107	107	107	107
Timber	4	4	9	9	9
Minerals	988	1,022	1,021	1,030	1,036
Ecosystem Restoration	46	46	59	59	59
Payments to States/Countries	402	415	414	416	418
BLM Expenditures	99	92	93	93	93
Total BLM Management	1,677	1,717	1,736	1,747	1,754
Percent Change from Current	---	2.4%	3.5%	4.1%	4.6%

**Table 4.10. Labor Income by Program by Alternative (Average Annual; \$1,000)**

Resource	Thousands of 2008 dollars				
	Current	Alt A	Alt B	Alt C	Alt D
Recreation	561	561	581	602	607
Wildlife and Fish	755	755	822	802	794
Grazing	\$2,340	\$2,340	\$2,340	\$2,340	\$2,340
Timber	\$118	\$118	\$225	\$225	\$225
Minerals	\$61,705	\$63,870	\$63,803	\$64,323	\$64,676
Ecosystem Restoration	\$1,130	\$1,130	\$1,548	\$1,548	\$1,548
Payments to States/Countries	\$13,850	\$14,290	\$14,278	\$14,349	\$14,397
BLM Expenditures	\$4,703	\$3,886	\$4,015	\$4,015	\$4,015
Total BLM Management	\$84,508	\$86,297	\$86,915	\$87,507	\$87,905
Percent Change from Current	---	2.1%	2.8%	3.5%	4.0%

**Table 4.11. Employment by Major Industry by Alternative (Average Annual)**

Industry	Total Number of Jobs Contributed				
	Current	Alt A	Alt B	Alt C	Alt D
Agriculture	98	98	106	106	106
Mining	644	666	666	671	674
Utilities	7	7	7	7	7
Construction	2	2	2	2	2
Manufacturing	6	7	7	7	7
Wholesale Trade	25	26	26	26	27
Transportation & Warehousing	21	22	22	22	22
Retail Trade	92	93	95	96	96
Information	7	7	7	7	7
Finance & Insurance	27	28	28	28	28
Real Estate & Rental & Leasing	20	20	20	20	21
Prof, Scientific, & Tech Services	30	30	31	31	31
Mngt of Companies	0	0	0	0	0
Admin, Waste Mngt & Rem Serv	40	40	40	41	41
Educational Services	11	11	11	11	11
Health Care & Social Assistance	79	81	81	82	82
Arts, Entertainment, and Rec	18	18	18	18	18
Accommodation & Food Services	84	85	88	88	88
Other Services	52	53	54	55	55
Government	415	425	427	429	430
Total BLM Management	1,677	1,717	1,736	1,747	1,754
Percent Change from Current	---	2.4%	3.5%	4.1%	4.6%

**Table 4.12. Labor Income by Major Industry by Alternative (Average Annual, \$1,000)**

Industry	Thousands of 2007 dollars				
	Current	Alt A	Alt B	Alt C	Alt D

Agriculture	\$1,966	\$1,968	\$2,177	\$2,177	\$2,178	
Mining	\$52,919	\$54,779	\$54,727	\$55,148	\$55,432	
Utilities	\$741	\$758	\$764	\$769	\$773	
Construction	\$53	\$54	\$55	\$55	\$55	
Manufacturing	\$177	\$181	\$183	\$185	\$186	
Wholesale Trade	\$997	\$1,014	\$1,029	\$1,039	\$1,047	
Transportation & Warehousing	\$780	\$791	\$804	\$813	\$819	
Retail Trade	\$2,126	\$2,160	\$2,193	\$2,208	\$2,218	
Information	\$289	\$292	\$298	\$301	\$303	
Finance & Insurance	\$801	\$817	\$824	\$833	\$839	
Real Estate & Rental & Leasing	\$718	\$723	\$743	\$748	\$751	
Prof, Scientific, & Tech Services	\$901	\$912	\$936	\$947	\$954	
Mgmt of Companies	\$15	\$16	\$16	\$16	\$17	
Admin, Waste Mgmt & Rem Serv	\$748	\$751	\$754	\$756	\$757	
Educational Services	\$169	\$172	\$174	\$175	\$175.6	
Health Care & Social Assistance	\$2,524	\$2,578	\$2,596	\$2,614	\$2,626	
Arts, Entertainment, and Rec	\$194	\$198	\$201	\$203	\$204	
Accommodation & Food Services	\$1,085	\$1,096	\$1,127	\$1,134	\$1,137	
Other Services	\$688	\$692	\$714	\$718	\$721	
Government	\$16,617	\$16,347	\$16,603	\$16,669	\$16,713	
Total BLM Management	\$84,508	\$86,297	\$86,915	\$87,507	\$87,905	
Percent Change from Current	---	2.1%	2.8%	3.5%	4.0%	

**Table 4.13. BLM Revenues and Payments to Counties (Annual Average, \$1,000)**

	<b>Current</b>	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>	
All Program Revenues	27,088	28,846	24,468	28,961	28,952	
Payment to States/Counties	13,447	13,875	13,863	13,932	13,978	

### **Impacts under Alternative B**

Estimates of the levels of employment and labor income that would be supported by Alternative B are based on anticipated land and mineral uses, resource outputs, and projected

BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in **Table 4-9** and **Table 4-10**, respectively.

**Minerals:** Annual oil and gas production from federal mineral estate would increase by an estimated 3.6 percent over current levels. Annual federal revenues associated with oil and gas production related activities on federal minerals would increase from current estimated levels (\$22.9 million) to an estimated \$23.8 million. From this, revenues distributed to the state and counties would be an estimated \$11.9 million. Alternative B would result in the estimated average annual production of 18.9 million MCF of natural gas, 174,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (Table 4-2). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,020 local jobs and an estimated \$63.8 million in local labor and proprietor's income annually. (**Table 4-9** and **Table 4-10**). Total annual federal revenues from mineral leasing, production, and sales would be an estimated \$28.1 million; of which an estimated total of about \$11.8 million would be distributed to the state and counties. Among all the alternatives, residential property sales would least likely be affected by the exploration, development, and production of federal oil or gas since wells would not be drilled within 0.25 miles of residential buildings.

**Recreation:** It is estimated that about 96,100 recreation visits, including fish and wildlife-related recreation activities, would account for less than 4 percent of all the local jobs and less than 2 percent of the labor income that could be supported by Malta Field Office activities. Alternative B would support approximately 60 jobs and \$1.4 million in labor income (**Table 4-9** and **Table 4.10**). The willingness to pay for recreation opportunities would represent an estimated consumer surplus of \$4.38 million annually.

**Government:** BLM expenditures would support approximately 90 jobs and \$4.0 million in labor income (**Table 4.9** and **Table 4.10**) in the local economy.

**Ecosystem Management:** Annual ecosystem management would continue to include mine reclamation and water treatment costs (\$2.479 million). Other costs would include mechanical treatment (\$281,000), prescribed burning of forested areas (\$973,000), mechanical treatments and prescribed burning of grass/shrubs (\$9,000), and invasive species treatments (\$254,000). Mine reclamation, water treatment, as well as 90 percent of mechanical treatments, and 63 percent of invasive species treatments are contracted out or paid for through cooperative agreements. Annual timber harvest performed by private businesses would continue to produce about 1,507 CCF of sawtimber. About 138 personal use permits (Christmas tree permits, firewood permits, etc.) would also be issued annually. Annual revenues from timber and salvage sales would be an estimated \$2,000. Ecosystem management and timber management would continue to support approximately 60 total jobs and \$1.5 million in total labor and proprietor's income in the local economy-(**Table 4.9** and **Table 4.10**).

Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative B would be about 1,700 jobs and \$86.9 million, respectively (**Table 4.9** and **Table 4.10**). These would be increases over current levels of about 3.5 percent and 2.8 percent, respectively. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about \$28.8 million per year. Annual payments to the State of Montana and to counties would be

approximately \$13.9 million, most of which would be related to oil and gas production and PILT payments.

### **Impacts under Alternative C**

Estimates of the levels of employment and labor income that would be supported by Alternative C are based on anticipated land and mineral uses, resource outputs, and projected BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in **(Table 4.9 and Table 4.10)**, respectively.

**Minerals:** Annual oil and gas production from federal mineral estate would increase by an estimated 4.2 percent over current levels. Annual federal revenues associated with oil and gas production related activities on federal minerals would increase from current estimated levels (\$22.9 million) to an estimated \$23.9 million. From this, revenues distributed to the state and counties would be an estimated \$12.0 million. Alternative C would result in the estimated average annual production of about 19.0 2 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (Table 4-2). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,030 local jobs and an estimated \$64.3 million in local labor and proprietor's income annually (Table 4.9 and Table 4.10). Total annual federal revenues from mineral leasing, production, and sales would be an estimated \$28.3 million; of which an estimated total of about \$12.0 million would be distributed to the state and counties. Residential property sales would likely be affected by the exploration, development, and production of federal oil or gas less than with Alternatives A or D because wells would not be drilled within 500 feet of residential buildings.

**Recreation:** The estimated 96,300 recreation visits, including fish and wildlife-related recreation activities, would account for less than 4 percent of all the local jobs and less than 2 percent of the labor income that could be supported by Malta Field Office activities. Alternative C would support approximately 70 jobs and \$1.4 million in labor income. The willingness to pay for recreation opportunities would represent an estimated consumer surplus of \$4.38 million annually.

**Government:** Economic impacts would be similar for Alternatives B, C, and D.

**Ecosystem Management:** Economic impacts would be similar for Alternatives B, C, and D.

**Conclusion:** Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative C would be about 1,747 jobs and \$87.5 million, respectively (Table 4.9 and Table 4.10). These would reflect increases of about 4.1 percent and 3.5 percent, respectively over current levels. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about \$29.0 million per year. Annual payments to the State of Montana and to counties would be approximately \$13.9 million, most of which would be related to oil and gas production and PILT payments.

### **Impacts under Alternative D**

Estimates of the levels of employment and labor income that would be supported by Alternative D are based on anticipated land and mineral uses, resource outputs, and projected

BLM expenditure levels. Estimated average annual employment and labor/proprietor's income are summarized by resource area in Table 4-9 and Table 4-10 respectively.

**Minerals:** Annual oil and gas production from federal mineral estate would increase by an estimated 4.6 percent over current levels. Annual federal revenues associated with oil and gas production related activities on federal minerals would increase from current estimated levels (\$22.9 million) to an estimated \$24.0 million. From this, revenues distributed to the state and counties would be an estimated \$12.0 million. Alternative D would result in the estimated average annual production of about 19.095 million MCF of natural gas, 175,000 bbl of oil, 38,500 short tons of construction sand and gravel, and 65,000 short tons of bentonite from federal minerals (**Table 4-2**). It is estimated that minerals exploration, development, and production on federal minerals would support about 1,040 local jobs and an estimated \$64.7 million in local labor and proprietor's income annually. (Table 4-9 and Table 4-10). Total annual federal revenues from mineral leasing, production, and sales would be an estimated \$28.4 million; of which an estimated total of about \$12.0 million would be distributed to the state and counties. Effects on residential property sales would be similar to those described for alternative A.

**Recreation:** The estimated 96,100 recreation visits, including fish and wildlife-related recreation activities, would account for less than four percent of all the local jobs and less than two percent of the labor income that could be supported by Malta Field Office activities. Alternative C would support approximately 60 jobs and \$1.4 million in labor income (Table 4-9 and Table 4-10). The willingness to pay for recreation opportunities would represent an estimated consumer surplus of \$4.37 million annually.

**Government:** Economic impacts would be similar for Alternatives B, C, and D.

**Ecosystem Management:** Economic impacts would be similar for Alternatives B, C, and D.

**Conclusion:** Overall, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor and proprietor's income contributed by BLM land and resource management under Alternative D would be about 1,750 jobs and \$87.9 million, respectively (Table 4-9 and Table 4-10.). These would reflect increases of about 4.6 percent and 4.0 percent, respectively over current levels. The largest employment and labor income effects would occur in the mining and government industry sectors. All program revenues to the federal government would be about \$30.0 million per year. Annual payments to the State of Montana and to counties would be approximately \$14.0 million, most of which would be related to oil and gas production and PILT payments.

### Cumulative Effects

Table 3.2 Output, Employment, and Income for the Malta Field Office Planning Area addresses economic indicators of all existing economic activity within the PA. This takes into account past actions that eventually evolved to present economic situation. The alternative actions shown in this chapter indicate how the local economy would change from the anticipated land uses with each alternative. Finally, a list of potential future projects and developments were discussed during meetings with the public at the community economic workshops and at internal interdisciplinary team meetings. Insufficient data and detail were available to analyze

the cumulative economic impacts associated with these potential future projects or developments.

#### Mitigation Measures

#### Unavoidable Adverse Impacts

None of the economic impacts discussed above would cause or be the result of unavoidable adverse impacts.

#### Short-Term Uses Versus Long-Term Productivity

Consumptive uses, e.g. mineral production, timber harvest, would be considered short-term uses that may influence and/or reduce long-term productivity of the land and mineral resources for future production. Here too, the development of minerals within the planning analysis period would preclude the use of those minerals in the future.

#### Irreversible and Irretrievable Impacts

The use of non-renewable resources would eliminate the potential economic uses of those resources in the future for the same or different purposes. This is generally assumed to apply to use of mineral resources.