
6.0 SOUTH PINEY IMPACT ANALYSIS

Infinity Oil and Gas of Wyoming, Inc. (Infinity) and Williams Production RMT Company (Williams) (hereinafter referred to as "the Companies") have notified the BLM PFO that they propose to drill and development natural gas resources in approximately 31,231 acres in portions of T29N and T30N, R114W approximately 13 mi west of Big Piney in Sublette County, Wyoming. Infinity would develop natural gas from the coals in the Upper Cretaceous Mesaverde Formation to a maximum depth of approximately 4,000 ft, whereas Williams would develop natural gas from the Frontier Formation to a maximum depth of approximately 10,000 ft. The project would be referred to as the South Piney Natural Gas Development Project (South Piney Project), and would include private (47%), state (4%) and federal (49%) surface and private (8.5%), state (6%) and federal (85.5%) minerals.

6.1 SPP PROPOSED ACTION AND ALTERNATIVE DESCRIPTIONS

The Proposed Action and three alternative actions are evaluated herein:

- the Proposed Action (up to 210 wells/well pads and associated facilities--see Section 6.3);
- Alternative A (up to 420 wells/well pads and associated facilities--see Section 6.4);
- Alternative B (up to 210 wells from 160 well pads and associated facilities--see Section 6.5);
and
- the No Action Alternative (see Section 6.6).

Additional alternatives considered but not analyzed in detail are discussed in BLM (2004b).

The following analyses show that the Proposed Action and Alternatives are compatible with BLM management objectives. Socioeconomic impacts are anticipated as a result of increased local taxes and revenues. Under the No Action Alternative the affects of increased employment, economic activity, and substantial federal, state, local, and county revenues would not occur; therefore, this alternative would not be in accord with BLM, state, and local land use plans.

The economic impact of the Proposed Action, alternatives, and cumulative impacts on the study-area economy were analyzed in two phases using the methods developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a). Phase I was the development phase, which considered the economic impacts associated with drilling and completion of infill wells in the JIDPA. Due to the large price fluctuations in natural gas prices, the economic impacts of production were estimated based on cost of production rather than total output.

Phase II considered the economic impact of natural gas production as a result of the production from the wells completed under Phase I.

BLM defines a significant change as any change that would result in a 15% or greater change of any affected factor. In the long-term, all alternatives would likely result in significant economic impacts; however, population is not likely to be significantly affected over the LOP, although there may be short-term population impacts as a result of cumulative impacts from in-migration not associated with the project.

6.2 ASSUMPTIONS

6.2.1 Labor

An estimated 736.5-768.8 worker-years of direct employment would be provided by the Proposed Action during a 20-year life of project (LOP) (BLM 2004b) (Table 6.1).

6.2.2 Natural Gas Drilling and Completion

For this analysis, it was assumed that all wells would be drilled but only 93% would be completed (per estimates from the Reservoir Management Group for the Pinedale RMP) (personal communication, February 12, 2004, with David T. Taylor, Professor, UWAED). The anticipated rate of development for the Proposed Action would be 30 wells per year for 7 years.

Table 6.1 Estimated Effort Required to Develop and Operate the South Piney Project.

Item	Infinity Wells		Williams Wells		Total Worker Years for Full Development (210 Wells) ¹
	Worker-Days per Well	Worker-Years for Full Development (160 Wells) ¹	Worker-Days per Well	Worker-Years for Full Development (50 Wells) ¹	
Well Construction/Development					
Well pad/access road construction	15	9.2	15	2.9	12.1
Rig transport/rig-up operations	60	36.9	60	11.5	48.4
Drilling	160	98.5	250	48.0	146.5
Completion/testing	60-100	36.9-61.5	60-100	11.5-19.2	48.4-80.7
Pipeline/ancillary facility installation	60	36.9	60	11.5	48.4
Operations/Maintenance					
Production ²	487	299.5	487	93.6	393.1
Workovers ³	24	14.8	24	4.6	19.4
Abandonment/Reclamation					
Abandonment	15	9.2	15	2.9	12.1
Reclamation	10	6.2	10	1.9	8.1
Total	891-991	548.1-572.7	981-1,021	188.4-196.1	736.5-768.8

¹ One worker-year equals 260 worker-days.² Assumes one visit per day to each well for 20-year life of well, with one worker visiting 15 wells per day.³ Assumes two workovers per well, 12 worker-days per workover.

Infinity

The cost of drilling, completing, and setting production equipment for an Infinity well to the Mesaverde Formation would average \$300,000, \$100,000, and \$100,000, respectively, for a total cost of \$500,000. The cost of annual production operations is assumed to be \$141,663 per well (Table 6.2).

Williams

The cost of drilling, completing, and setting production equipment on a Williams well to the Frontier Formation would average \$600,000, \$350,000, and \$150,000, respectively, for a total cost of \$1.1 million. The costs of annual production operations are assumed to be \$141,663 per well.

Table 6.2 Direct Annual Operating Cost Assumptions.¹

Operating Cost Item	Cost (\$) ²
Direct labor and overhead	5,371
Fuel, chemicals, and disposal	7,560
Surface maintenance	11,240
Subsurface maintenance	2,785
Electricity ³	3,581
Gas compression costs ^{4,5}	47,625
Gas transportation costs ^{4,6}	63,501
Total annual costs⁵	141,663
Non-labor annual costs ⁵ (Total annual costs - Direct labor and overhead)	136,292
Total annual cost per MCF ⁵	0.89
Non-labor cost per MCF ⁵	0.86

¹ Source: EIA (2000).

² In 2000 dollars, adjusted for inflation. Assumes one 8,000-ft well.

³ Assumes 5,000 kilowatts per month at \$0.06 per kilowatt for 12 months.

⁴ Assumes \$0.31/MCF.

⁵ Assumes annual production of 159,600 MCF.

⁶ Assumes \$0.41/MCF.

6.2.3 Natural Gas Production

Infinity

Infinity anticipates that each well (160 drilled, 93% completed, total 149 producing) would produce of 172.15 MMCF/year and 513,000 MMCF for the LOP. This is a best estimate of production because sufficient data are not available to determine initial or LOP production. The annual cost of production operations used for the analysis is presented in Table 6.3.

Williams

Williams anticipates that each well (50 drilled, 93% completed, total 47 producing) would produce of 63.83 MMCF/year and 60,000 MMCF for the LOP. This is a best estimate of production because sufficient data are not available to determine initial or LOP production. The annual cost of production operations used for the analysis is presented in Table 6.2.

6.3 PROPOSED ACTION IMPACTS (210 WELLS/WELL PADS)

Estimates of the economic impacts of oil and gas development on the Southwest Wyoming economy in terms of total economic impact, earnings, and jobs were based on the updated calibrated county-specific model from the SWRE and JMHCAP reports. The employment estimates were expressed as AJEs.

6.3.1 Infinity Natural Gas Development Impacts

6.3.1.1 Drilling and Completing

The estimated costs for drilling and completing natural gas wells were obtained from the Operators (see Section 6.2.1). As shown in Table 6.3, expenditures made to drill and complete one Infinity well (\$500,000), would generate total economic impacts (direct and secondary) of \$684,054 (includes \$148,054 of labor earnings) and would generate 4.5 AJEs. Over the development period (7 years), Infinity drilling would nominally return \$101.0 million (\$61.9 million present value impact).

6.3.1.2 Production Operation Impacts

The estimated cost for operating natural gas wells was obtained from the EIA (2000) (Table 6.2). As shown in Table 6.4, expenditures made to operate (\$141,663) and production from one Infinity well would generate total economic impacts (direct and secondary) of \$559,480 (includes \$12,607 of labor earnings) and would generate 0.33 AJEs annually. Over the LOP (20 years), Infinity production would nominally return \$1.7 billion (\$1.2 billion present value impact).

Table 6.3 SPP Gas Drilling Impacts.

Estimated Impacts	Proposed Action and Alternative B Impacts ¹				Alternative A ¹			
	Infinity	Williams	Total	Annual (LOP)	Infinity	Williams	Total	Annual (LOP)
PER WELL								
Direct Expenditures								
Drilling (\$)	300,000	600,000	na	na	300,000	600,000	na	na
Completion (\$) ²	200,000	500,000	na	na	200,000	500,000	na	na
Total Direct Expenditures (\$)	500,000	1,100,000	--	--	500,000	1,100,000	--	--
Labor Earning								
Drilling (\$)	109,848	219,696	na	na	109,848	219,696	na	na
Completion (\$) ²	38,206	95,515	na	na	38,206	95,515	na	na
Total Labor Earnings (\$)	148,054	315,211	--	--	148,054	315,211	--	--
Total Impact per Well	648,054	1,415,211	na	na	648,054	1,415,211	--	--
Annual Job Equivalents (AJEs)								
Drilling	3.3	6.7	na	na	3.3	6.7	na	na
Completion ²	1.2	3.1	na	na	1.2	3.1	na	na
Total AJEs per Well³	4.5	9.8	--	--	4.5	9.8	--	--
TOTAL WELLS								
Number of Wells	160	50	210	10.5	320	100	420	21.0
Completion ² Rate	93.0%	93.0%	na	na	93.0%	93.0%	na	na
Total Earnings Impacts								
Total Expenditures (\$) (Drilling + 93% Completion)	77,760,000	53,250,000	131,010,000	6,550,500	155,520,000	106,500,000	262,020,000	13,101,000
Total Labor Earnings (\$)	23,260,733	15,426,248	38,686,980	1,934,349	46,521,466	30,852,495	77,373,961	3,868,698
Total Impacts Action Alternative (\$)	101,020,733	68,676,248	169,696,980	8,484,849	202,041,466	137,352,495	339,393,961	16,969,698
Discounted (Present Value) LOP Impact (\$)⁵	88,242,245	59,989,134	148,231,378	na	176,484,490	119,978,267	296,462,757	na
Total AJEs	706.6	479.2	1,185.7	59.3	1413.1	958.3	2,371.4	118.6
Average Earnings Per Created Jobs ⁴ (\$)	32,921	32,195	32,628	32,628	32,921	32,195	32,628	32,628

¹ na = not applicable at this level.

² Completion includes the cost of completion and setting of production equipment.

³ AJEs are jobs indirectly created as a result of the activity. They do not include the direct labor jobs presented in Table 6.1.

⁴ This estimated average annual starting wage per job would not necessarily be the actual wage paid for each created job. Actual wages are determined on an individual basis by employers as influenced by market forces.

⁵ See Section 2.2 for a discussion of discounting. Assumes a 7-year development period.

Table 6.4 Gas Production Impacts LOP--South Piney.

Estimated Impacts	Infinity	Williams	Total	Annual Average for the LOP
<u>Per MMCF</u>				
Price/MMCF	\$3,250	\$3,250	\$3,250	\$3,250
Labor Earnings	\$197.52	\$197.52	\$197.52	\$197.52
Employment	0.0052	0.0052	0.0052	0.0052
<u>Total Production (LOP)</u>				
LOP MMCF	513,000	60,000	573,000	28,650
LOP Value of Production ¹	\$1,667,250,000	\$195,000,000	\$1,862,250,000	\$93,112,500
LOP Labor Earnings	\$101,327,760	\$11,851,200	\$113,178,960	\$5,658,948
Total LOP Impact	\$1,768,577,760	\$206,851,200	\$1,975,428,960	\$98,771,448
Discounted (Present Value) LOP Impact ²	\$1,256,787,020	\$146,992,634	\$1,403,779,654	na
LOP Job Equivalents	2,668	312	2,980	149.0
Average Annual Starting Wage Per Job	\$37,985	\$37,985	\$37,985	\$37,985

¹ The value of production is based on revenues less cost of operation.

² See Section 2.2 for a discussion of discounting. Assumes equal annual production for a 20-year production period. na = not applicable.

6.3.1.3 Government Revenues

The project would generate substantial revenues for state, county, and local governments as well as area school districts through ad valorem taxes, severance taxes, federal royalties, and other taxes on facilities and production. Infinity anticipates that each of the 149 completed wells (93% of 160 drilled wells) would produce 172.15 MMCF/year for a total of 513,000 MMCF for the LOP from all wells. This is a best estimate of production because sufficient data are not available to determine initial or LOP production.

Assuming that 149 wells would be completed, and natural gas prices were \$3.25/mcf (CREG 2003), it is estimated that LOP nominal gross income from the field would be \$1.4 billion (Table 6.5). Nominal transportation costs are estimated at \$210.3 million (paid to pipeline companies), federal royalties at \$182.1 million (half of the royalties are returned to the state), state severance taxes at \$87.4 million, and county ad valorem taxes at \$102.0 million. Total nominal taxes and revenues generated by Infinity would be approximately \$371.5 million over the LOP (\$264.0 million present value impact). In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the SPPA. Additional natural gas

Table 6.5 Estimated Annual and LOP Revenues and Taxes Resulting From Infinity's 149 Mesaverde Wells Producing an Average of 0.47 MMCFpd of Natural Gas and From Williams' 47 Frontier Wells Producing an Average of 0.17 MMCFd of Natural Gas.¹

Item	Rate	LOP (years)	Annual		LOP	
			Gas Recovered (MMCF)	Amount	Gas Recovered (MMCF)	Amount (millions)
Infinity (160 wells)						
Income	\$3.25 ²	20	25,650	\$3,362,500	513,000	\$1,667.3
Transportation fees	\$0.41 ²	20	25,650	\$10,516,500	513,000	\$210.3
Income less transportation fees	--	--	--	\$72,846,000	--	\$1,456.9
Federal royalties	12.5% ³	20	--	\$9,105,750	--	\$182.1
State severance taxes	6.0% ⁴	20	--	\$4,370,760	--	\$87.4
County and ad valorem taxes	7.0% ⁵	20	-	\$5,099,220	--	\$102.0
Total taxes/royalties - Infinity	na	na	na	\$18,575,730	na	\$371.5
Present value of total taxes/royalties - Infinity ⁶	na	na	na	na	na	\$264.0
Williams (50 wells)						
Income	\$3.25 ²	20	3,000	\$9,750,000	60,000	\$195.0
Transportation fees	\$0.41 ²	20	3,000	\$1,230,000	60,000	\$24.6
Net income (gross income less transportation fees)	na	na	na	\$8,520,000	na	\$170.4
Federal royalties	12.5% ³	20	na	\$1,065,000	na	\$21.3
State severance taxes	6.0% ⁴	20	na	\$511,200	na	\$10.2
County and ad valorem taxes	7.0% ⁵	20	na	\$596,400	na	\$11.9
Total taxes/royalties - Williams	na	na	na	\$2,172,600	na	\$43.4
Present value of total taxes/royalties - Williams ⁶	na	na	na	na	na	\$30.8
Nominal total taxes/royalties – Infinity plus Williams	na	na	na	\$20,748,330	na	\$414.9
Present value of total taxes/royalties - Infinity plus Williams⁶	na	na	na	na	na	\$294.8

¹ Based on estimated 93% completion rate of all wells drilled (personal communication, February 12, 2004, with David T. Taylor, Professor, UWAED). na = not applicable.

² Rate per mcf (mcf = one thousand cubic feet); price per mcf from CREG (2003); transportation cost per mcf from EIA (2000).

³ Based on net income.

⁴ Based on gross revenue less federal royalties.

⁵ Based on net income less federal royalties.

⁶ See Section 2.2 for a discussion of discounting. Assumes a 20-year production period.

production is beneficial to consumers because retail prices for natural gas are affected by supply and demand. As supply increases in relation to demand, prices of natural gas tend to fall. Reduced energy costs are a benefit to the local, state, and national economies. While, conceptually, changes in production for this field could impact pricing of natural gas for consumers, given the size of the market it is not likely that a measurable change in market price would occur.

6.3.2 Williams Natural Gas Development Impacts

6.3.2.1 Drilling and Completing

The estimated costs for drilling and completing natural gas wells were obtained from the Operators (see Section 6.2.1). As shown in Table 6.2, direct expenditures made to drill and complete one Williams well (\$1,100,000), would generate total economic impacts (direct and secondary) of \$1,415,211 (includes \$315,211 of labor earnings) and would generate 9.8 AJEs (Table 6.2). LOP impact from Williams drilling and completing (assuming a 7-year development period) under the Proposed Action would be \$68.6 million (present value impact of \$59.9 million).

6.3.2.2 Production Operation Impacts

The estimated cost for operating natural gas wells was obtained from the EIA (2000) (Table 6.2). As shown in Table 6.5, expenditures made to operate (\$141,663) and production from one Williams well, would generate total economic impacts (direct and secondary) of \$207,447 (includes \$34,002 of labor earnings) and would generate 0.90 AJEs annually. Nominal LOP production from Williams would provide a nominal impact of \$206.8 million (\$146.9 million present value impact).

6.3.2.3 Government Revenues

Assuming that of the 50 wells that would be drilled, 47 would be completed, and natural gas prices were \$3.25/mcf (CREG 2003), it is estimated that LOP gross income from the field would be

companies), federal royalties at \$21.3 million (half of the royalties are returned to the state), state severance taxes at \$10.2 million, and county ad valorem taxes at \$11.9 million. Total nominal taxes and revenues generated by Infinity would be approximately \$43.4 million over the LOP (\$30.8 million present value impact). As with Infinity wells, property tax revenues would increase due to the increased tax base resulting from capital improvements in the SPPA.

6.3.3 Summary of Natural Gas Development Impacts

In summary, nominal gross LOP income from the Proposed Action would exceed \$1.8 billion (Table 6.5). Transportation costs would be \$234.9 million, federal royalties \$203.4 million, state severance taxes \$97.6 million, and county ad valorem taxes \$113.9 million. Total direct impacts from development of the Proposed Action would be \$169,696,980 (including \$38,686,980 of labor earnings) and would generate 1,185.7 AJs (Table 6.3), while production would provide \$1.9 billion over the LOP (Table 6.4). In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements and higher mineral property assessments, and increased sales and use tax revenues. Nominal taxes and revenues generated from the SPP would be over \$414 million dollars over the LOP. Additional revenues would accrue to the U.S. in the form of personal income taxes and corporate taxes. Finally, this evaluation does not take into consideration condensate production that would add to income and tax/royalty revenues. Wyoming, and especially Sublette, Sweetwater, and Lincoln Counties are highly dependent on mineral revenues, and the revenue anticipated from the Proposed Action would add to those revenues.

6.3.4 Recreation Impacts

There are no developed recreational areas within the SPPA; therefore, none would be affected by the Proposed Action (BLM 2004b). All dispersed recreational opportunities that now occur in the SPPA would be available under the Proposed Action; however, it is likely that the level of use would be affected due in part to a reduction in desirability resulting from gas development. Some people would find the gas development distracting or undesirable and would likely choose other less developed areas in which to recreate. On the other hand, additional access to the area may

encourage other users especially off-road vehicle users. Additional off-road vehicle use could further discourage other recreationists who seek a less noisy environment. Overall, a moderate reduction in recreational use would likely occur.

Studies of workers on oil and gas projects have found that the immigrant workforce typically participates in outdoor recreation at lower levels than the existing population, and that these workers typically do not recreate in the vicinity of project sites and leave the project area on their days off (Wyoming Recreation Commission 1987). Many of the workers on the proposed project would be local and would return to their homes during off hours and recreate at previously established locales. Therefore, impacts from competition for recreational opportunities between people working on the project and other users would likely be negligible.

The level of hunting would be affected due in part to a reduction in desirability resulting from gas development--especially for mule deer, elk, and moose--which could also be affected by impacts to big game populations in the SPPA.

Economic losses could result if recreationists and hunters were displaced from the SPPA and moved their activities out of the study area. Losses would be proportional to the number of displaced recreationists/hunters. Direct impacts from displaced nonconsumptive recreationists (per visitor day) could result a loss of \$27.35 (including \$8.15 of labor income) and 0.000621 AJEs each. Direct impacts from displaced pronghorn hunters (per hunter day) could result in a loss of \$381.30 (including \$155.16 of labor income) and 0.012087 AJEs each. Direct impacts from displaced deer hunters (per hunter day) could result in a loss of \$331.70 (including \$134.98 of labor income) and 0.010515 AJEs each. Direct impacts from displaced elk hunters (per hunter day) could result in a loss of \$188.91 (including \$76.87 of labor income) and 0.005988 AJEs each. Direct impacts from displaced moose hunters (per hunter day) could result in a loss of \$197.18 (including \$80.24 of labor income) and 0.006251 AJEs each. Direct impacts from displaced cottontail hunters (per hunter day) could result in a loss of \$173.06 (including \$70.42 of labor income) and 0.005486 AJEs each. Direct impacts from displaced greater sage-grouse hunters (per hunter day) could result in a loss of \$130.03 (including \$53.02 of labor income) and 0.004131 AJEs each.

It is likely that any recreationists discouraged from engaging in activities in the SPPA as a result of natural gas development would relocate their activities to other locations in the vicinity; thus, no economic loss is likely to result from loss of recreation due to the proposed project.

6.3.5 Agriculture/Rangeland Impacts

There would be a reduction in AUMs on grazing allotments within the SPPA due to road, pipeline, and well pad construction (BLM 2004b). For the purposes of this analysis, UWAED conservatively assumed that the AUMs would actually be removed from the allotments and result in a complete loss of those AUMs during initial disturbance and for the LOP. The annual loss from initial disturbance would be 189 AUMs. The annual loss from LOP disturbance would be 75 AUMs. Such an annual loss in AUMs does not take into consideration the possibility that areas reclaimed shortly after initial disturbance--areas not needed for the LOP--may provide more forage (forbs and grass) for livestock than the previously undisturbed range. Short-term (initial) disturbance would be spread over the development period and would be scattered throughout the SPPA in small parcels so that a relatively few areas of small size would be disturbed in any one year. After a few years much of the previously disturbed land would be revegetated and likely producing more forage than prior to disturbance. The entire area of short-term disturbance would never all be out of production at the same time.

Direct economic impact from the loss of AUMs (189 initial and 75 LOP) would result in an initial unrealized production of \$6,670 and \$2,647 annually production returns would go unrealized for the LOP (Table 6.6). Total initial unrealized production income would be \$11,574 (including \$3,489 of labor earnings) and 0.13 AJEs would not occur. For the LOP, total unrealized impacts would be \$4,493 annual production revenues (including \$1,385 of labor earnings), and approximately 0.05 AJEs.

Table 6.6 Cattle Grazing Impacts, SPP.

Impact	Proposed Action ¹		Alternative A ¹		Alternative B ¹		No Action
	Initial	LOP (annual)	Initial	LOP (annual)	Initial	LOP (annual)	
AUMs	-189	-75	-289	-114	-146	-60	3,812
Total Direct Impact	-\$6,670	-\$2,647	-\$10,199	\$4,023	-\$5,152	-\$2,117	\$134,525
Total Impact	-\$11,574	-\$4,593	-\$17,698	\$6,981	-\$8,941	-\$3,674	\$233,447
Annual Job Equivalents	-0.13	-0.05	-0.20	0.080826	-0.10	-0.04	2.70
Labor Earnings	-\$3,489	-\$1,385	-\$5,335	\$2,104	-\$2,695	-\$1,108	\$70,370
Average Annual Starting Wage Per Job	-\$26,037	-\$26,037	-\$26,037	\$26,037	-\$26,037	-\$26,037	\$26,037

¹ Lost AUMs would result in a loss of production, lost jobs, and lost earnings per job.

6.4 ALTERNATIVE A (420 WELLS/WELL PADS)

6.4.1 Natural Gas Development Impacts

Economic impacts under Alternative A would be similar to those for the Proposed Action; however, the increased number of well pads would result in greater economic impacts than under the Proposed Action because the number of well pads would be doubled. Under Alternative A, drilling and completion would generate total economic impacts (direct and secondary) of \$339.3 million (\$296.4 million present value impact) (includes \$77.3 million of labor earnings) and would generate 2,371.4 AJs. Because there would be no additional production over the LOP, impacts from production and government revenues would remain essentially as described under the Proposed Action. Due to the establishment of management areas with additional development restrictions there would likely be increased management and labor burdens for the Companies that could delay development and the realization of revenues.

6.4.2 Recreation Impacts

Economic impacts to recreation under Alternative A would be similar to those for the Proposed Action.

6.4.3 Agriculture/Rangeland Impacts

Socioeconomic impacts under Alternative A would be similar in kind as described for the Proposed Action; however, there would be additional personnel and payroll associated with the drilling and development of 210 additional wells. There would be additional short-term demands on temporary housing; however, the use of local workers would result in negligible impacts on the demand for housing. Traffic within the SPPA would increase due to additional project-related activity associated with a doubling in the number of wells, and county roads would have to be appropriately upgraded. Economic benefits would depend upon gas production generated from additional wells, and would generally be proportional to any increased gas production.

Impacts would be similar in timing and kind to those in the Proposed Action (BLM 2004b). However, impacts would disturb more surface because twice as many well pads would be developed. The annual loss from initial disturbance would be 289 AUMs. The annual loss from LOP disturbance would be 114 AUMs.

Direct economic impact from the loss of AUMs (289 initial and 114 LOP) would result in an initial loss of production of \$10,199 and an annual loss of \$4,023 for the LOP (Table 6.6). Total initial losses would be \$17,968 (including \$5,335 of labor earnings) and 0.20 AJEs would be lost. For the LOP, total losses would be \$6,981 (including \$2,104 of labor earnings), and approximately 0.08 AJEs annually.

6.5 ALTERNATIVE B (210 WELLS/160 WELL PADS)

6.5.1 Natural Gas Development Impacts

Economic impacts under Alternative B would be similar to those for the Proposed Action. Due to the establishment of management areas with additional development restrictions there would likely be increased management and labor burdens for the Companies that could delay development and the realization of revenues.

6.5.2 Recreation

Impacts to recreation under Alternative B would be similar in kind to those for the Proposed Action. The level of hunting would be affected due in part to a reduction in desirability resulting from gas development --especially for mule deer, elk, and moose--which could also be affected by impacts to big game populations in the SPPA.

6.5.3 Agriculture/Rangeland

Impacts would be similar in timing and kind to those in the Proposed Action. However, impacts would disturb less surface area because the 210 wells would be developed from approximately 160 well pads. The annual loss from initial disturbance would be 146 AUMs. The annual loss from LOP disturbance would be 60 AUMs.

Direct economic impact from the loss of AUMs (146 initial and 60 LOP) would result in an initial loss of production of \$5,152 and an annual loss of \$2,117 for the LOP (Table 6.6). Total initial losses would be \$8,941 (including \$2,695 of labor earnings) and 0.10 AJEs would be lost. For the LOP, total losses would be \$3,674 (including \$1,108 of labor earnings), and approximately 0.04 AJEs annually.

6.6 NO ACTION ALTERNATIVE

6.6.1 Natural Gas Well Development and Production

The economic benefits accruing from the anticipated gas production in the SPPA would not be realized under the No Action Alternative. Economic benefits from gas production would be limited to that generated by the 10 existing wells and approximately 17 wells that could be drilled on private and state surface/minerals assuming that access and landowner approval would be obtained. However, well pads would have to be located so that they did not drain adjacent federal gas reserves and, in the case of wells to the Mesaverde Formation, would require an adequate number of wells to dewater the reservoir and release the gas. One or two wells drilled to the Mesaverde coals on private and state surface/minerals would not be adequate to dewater the coals and recover gas resources. Rather, it would normally require at least four wells on 160-acre spacing, and the scattered parcels of private and state surface/minerals would often make that difficult or impossible. Traffic within the SPPA would remain near present levels, with possible increases due to increased recreational use.

Natural gas development would include existing wells and to wells drilled on state and private surface/minerals that would not require a federal permit. However, it is likely that existing Infinity wells on the SPPA would be plugged and abandoned for economic reasons (personal communication with Reed Scott, Infinity Oil and Gas of Wyoming, Denver, Colorado), as would two of the three Williams wells (personal communication with Jennifer Head, J. A. Rohn Consulting, Fort Collins, Colorado). One Williams well may be kept in production as long as it is economically feasible (personal communication with Jennifer Head, J. A. Rohn Consulting, Fort Collins, Colorado).Forty-nine wells disturbing 431 acres could be developed in the SPPA as a result of reasonably foreseeable disturbance. Most of the wells would require a federal permit and would be subject to mitigation measures similar to those in the South Piney Project; therefore, impacts to land use would likely be low. Impacts would be less from reasonably foreseeable disturbance than from any of the action alternatives because fewer well pads/roads would be built.

Under the No Action Alternative, drilling and completion of an additional 17 wells on private land would generate total economic impacts (direct and secondary) of \$23,349,924 (includes \$5,244,924 of labor earnings) and would generate 162.9 AJEs. Assuming an average annual production of 146.17 MMCF per well (average of the estimated production from Infinity and Williams wells in the Proposed Action), the 10 existing wells plus 17 new wells would generate total economic impacts (direct and secondary) of \$272,125,418 (includes \$15,590,979 of labor earnings) and would generate 410 AJEs over 20 years.

6.6.2 Grazing

Land use under the No Action Alternative would continue as at present, with livestock grazing, wildlife habitat, recreation, and existing facilities dominating use. None of the economic livestock grazing losses described under the Proposed Action would occur as a result of the No Action Alternative. However, fluctuations in cattle markets as a result of brucellosis found in cattle herds in Sublette County, resulting quarantines on Wyoming livestock, and the nationwide impact of bovine spongiform encephalopathy on beef demand are undetermined and not addressed in this analysis.

6.6.3 Recreation

Land use under the No Action Alternative would continue as at present, with livestock grazing, wildlife habitat, recreation, and existing facilities dominating use.

The level of hunting would be affected due in part to a reduction in desirability resulting from gas development --especially for mule deer, elk, and moose--which could also be affected by impacts to big game populations in the SPPA.

The economic losses described under the Proposed Action would not necessarily occur as a result of the No Action Alternative; however, existing natural gas development may result in similar losses if hunters/recreationists are displaced.

6.7 CUMULATIVE IMPACTS

The cumulative impacts assessment area for socioeconomics includes Sublette, Lincoln, and Sweetwater Counties. All of these counties depend upon the oil and gas industry for a significant portion of their economic activity and tax base (refer to Section 3.0), and the South Piney Project, along with other oil and gas development, would increase employment opportunities, expand the tax base, and improve the abilities for the counties to maintain and increase services and infrastructure to their residents. When considering employment, tax base/revenues, and general economic health, increased oil and gas development produces beneficial impacts. Wells developed as part of this project would add proportionately to the economic benefits realized from the area. Local communities would experience beneficial economic impacts from an increase in consumption of local goods and services and increased sales tax revenues. For instance, construction of well pads and roads is usually contracted to local construction companies, and it is likely that many employees would spend some of their payroll in these communities. Actual impacts would depend on the rate of development and the number of wells authorized.

Increases in regional oil and gas development activity in a short period of time can cause notable changes in employment and income. These variables can in turn cause changes in population trends, which could have detrimental effects on community services, social structures and lifestyles. Increased oil and gas development is expected, under all alternatives, to cause a significant increase in taxes and revenues to all governments in the study area. Significant increases to ad valorem taxes would be expected to occur in Sublette County. Conversely, under the No Action Alternative, these increases would not be realized, which could result in negative impacts to local government. Additional revenues would accrue to the U.S. in the form of personal and corporate income taxes. Finally, this evaluation does not take into consideration condensate production that would add to income and tax/royalty revenues. Wyoming, and especially Sublette, Sweetwater, and Lincoln Counties are highly dependent on mineral revenues, and the revenue anticipated from the Proposed Action would add to those revenues.

Where the surface is in private ownership and the minerals are in federal ownership, a lease holder has the right of ingress and egress on the private surface and the right to disturb whatever is reasonably necessary to recover the minerals. This does not prevent the private owner and the lease holder from entering into mutually acceptable terms regarding surface use to facilitate the process.

When both the surface and minerals are in private ownership, negotiations for a lease--including financial considerations--are between the private owner and the potential lessee, and the terms of the lease--financial and otherwise--are negotiated by the two parties. It is usual for the private mineral owner to share in the profits from the recovery of the mineral resource.

However, some portion of the resident population, as well as many non-residents, prioritize preserving the naturalness of the area above all else and are not in favor of the high level of oil and gas development proposed in SPPA. These individuals may be adversely affected on a personal aesthetic and moral level by the Proposed Action and Alternatives.

6.8 UNAVOIDABLE ADVERSE IMPACTS

There would be no unavoidable short-term or long-term adverse impacts to socioeconomics as a result of the proposed project.

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