

Table of Contents

CHAPTER 1: ISSUES AND OTHER RESOURCE AREA RESPONSIBILITIES

ISSUE DRIVEN PLANNING	1
ISSUES CONSIDERED BUT NOT ANALYZED AS PART OF THE LAND USE ALTERNATIVES	1
ISSUES CONSIDERED IN THE LAND USE PLAN ALTERNATIVES	3
WILDERNESS STUDY PROCESS	9
BILLINGS RESOURCE AREA RESPONSIBILITIES COMMON TO ALL OF LAND USE PLAN ALTERNATIVES ..	9

CHAPTER 2: THE ALTERNATIVES

INTRODUCTION	13
THE PROPOSED PLAN	13
HOW THE PROPOSED PLAN WILL BE IMPLEMENTED AND MONITORED	13
DESCRIPTION OF THE PROPOSED PLAN	14
Grazing Management	14
Wild Horse Management	17
Wildlife Management	18
Timber Management	20
Coal	20
Oil and Gas Leasing	24
Land Tenure Adjustment	24
Classifications	26
Recreation Access	26
Off-road Vehicle Use	26
Environmental Education	27
Wild Horse Interpretation	27
Wilderness	31
CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE	36
Grazing Management	36
Wild Horse Management	36
Wildlife Management	37
Timber Management	38
Coal	38
Oil and Gas Leasing	38
Land Tenure Adjustment	38
Classifications	39
Recreation Access	39
Off-road Vehicle Use	39
Environmental Education	39
Wild Horse Interpretation	39
Wilderness	40
LOW LEVEL MANAGEMENT ALTERNATIVE	41
Grazing Management	41
Wild Horse Management	41
Wildlife Management	41
Timber Management	43
Coal	43
Oil and Gas Leasing	43
Land Tenure Adjustment	43
Classifications	44
Recreation Access	44
Off-road Vehicle Use	44
Environmental Education	44
Wild Horse Interpretation	44
Wilderness	44
HIGH LEVEL MANAGEMENT ALTERNATIVE	45
Grazing Management	45
Wild Horse Management	45
Wildlife Management	46

Timber Management	47
Coal	48
Oil and Gas Leasing	48
Land Tenure Adjustment	48
Classifications	49
Recreation Access	50
Off-road Vehicle Use	50
Environmental Education	50
Wild Horse Interpretation	50
Wilderness	50
SUMMARY OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE	57
Proposed Land Use Plan	57
Continuation of Existing Management Alternative	63
Low Level Management Alternative	64
High Level Management Alternative	66
CHAPTER 3: THE Affected ENVIRONMENT	
INTRODUCTION	69
CLIMATE	69
AIR QUALITY	69
GEOLOGY AND TOPOGRAPHY	69
Energy Minerals	70
Industrial Minerals	81
Bentonite	81
Gypsum	82
Vandium/Uranium	82
Metaliferous Oil Shale	83
Limestone	83
Sand and Gravel	83
Building and Decorative Stone	83
SOILS/WATERSHED	83
Erosion	84
Runoff	85
Water Quality	85
Streambank Erosion	85
Water Use	85
Groundwater	87
VEGETATION	87
Threatened and Endangered Plants	90
Livestock	90
Grazing Management	90
Timber Management	91
WILD HORSES	92
WILDLIFE	94
Big Game	94
Upland Game Birds	96
Waterfowl	97
Threatened and Endangered Species	98
Furbearers	99
Nongame Animals	99
Fisheries	99
LANDS	99
Land Tenure Adjustment	100
Classifications	100
RECREATION	100
Primary Recreation Sites	101
Visual Resource Management	101
CULTURAL RESOURCES	102
WILDERNESS	103
Twin Coulee Wilderness Study Area	105
Pryor Mountain Wilderness Study Area	109
Burnt Timber Canyon Wilderness Study Unit	116
Big Horn Tack-On Wilderness Study Unit	119
Multiple Resource Benefits from Wilderness Designation	122
Diversity in the National Wilderness Preservation System	122
Wilderness Opportunities	123
Social and Economic Conditions	123

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

INTRODUCTION	133
ASSUMPTIONS	133
Grazing Management	133
Wildlife	133
Land Tenure Adjustment	134
Cultural Resources	134
Coal	134
Oil and Gas Leasing	134
Visual Resources	134
Wilderness	134
METHODOLOGY	135
GENERAL IMPACTS	135
Air Quality	135
Minerals	135
Soils/Watershed	135
Vegetation	137
Livestock	139
Wild Horses	139
Wildlife	140
Recreation	142
Visual Resources	143
Cultural Resources	143
Wilderness (Suitable for Designation)	144
Wilderness (Not Suitable for Designation)	144
Social	144
Economic	145
PROPOSED PLAN	146
Minerals	146
Soils/Watershed	146
Vegetation	147
Livestock	148
Wild Horses	148
Wildlife	149
Recreation	150
Visual Resources	151
Cultural Resources	152
Wilderness	153
Social	154
Economic	154
CONTINUATION OF EXISTING MANAGEMENT ALTERNATIVE	156
Minerals	156
Soils/Watershed	156
Vegetation	157
Livestock	158
Wild Horses	158
Wildlife	159
Recreation	160
Visual Resources	161
Cultural Resources	162
Wilderness	163
Social	164
Economic	164
LOW LEVEL MANAGEMENT ALTERNATIVE	166
Minerals	166
Soils/Watershed	166
Vegetation	167
Livestock	168
Wild Horses	168
Wildlife	169
Recreation	170
Visual Resources	171
Cultural Resources	171
Wilderness	172
Social	173
Economic	174
HIGH LEVEL MANAGEMENT ALTERNATIVE	178
Minerals	178
Soils/Watershed	178

Vegetation	179
Livestock	181
Wild Horses	182
Wildlife	182
Recreation	184
Visual Resources	185
Cultural Resources	186
Wilderness	186
Social	188
Economic	188
CHAPTER 5: CONSULTATION AND COORDINATION	
PUBLIC INVOLVEMENT AND CONSULTATION DURING DEVELOPMENT OF THE DRAFT EIS	191
WILDERNESS COORDINATION MEETINGS	191
OTHER AGENCIES AND ORGANIZATIONS CONSULTED	191
Special Interest Groups	191
Local, State and Federal Government Elected	192
State and Local Government Executive	193
Federal Agencies	193
Individuals	193
PUBLIC INVOLVEMENT AND CONSULTATION DURING THE DEVELOPMENT OF THE FINAL EIS	193
RESPONSES TO COMMENTS AND LETTERS	249
LIST OF PREPARERS	284
INDEX	286
APPENDICES	
1.1: AGENCY'S RESPONSIBILITIES IN THE BILLINGS RESOURCE AREA	A-2
1.2: THE PLANNING PROCESS	A-3
1.3: ISSUES AND PLANNING CRITERIA	A-4
1.4: COAL UNSUITABILITY CRITERIA	A-6
1.5: OIL AND GAS STIPULATIONS	A-9
1.6: STATE DIRECTOR GUIDANCE, LAND PATTERN REVIEW CRITERIA	A-10
1.7: ORGANIC ACT NO. 81-11	A-12
1.8: SUMMARY OF ALLOTMENTS BY CATEGORY	A-13
1.9: APPLICATION OF UNSUITABILITY CRITERIA	A-19
1.10: METHODOLOGY FOR MITIGATING IMPACTS TO CULTURAL RESOURCES	A-20
2.1: COST CALCULATIONS OF RANGE IMPROVEMENTS AND VEGETATION MANIPULATIONS	A-21
2.2: COST CALCULATIONS OF WILDLIFE HABITAT IMPROVEMENTS	A-23
2.3: MINING SCENARIO	A-24
2.4: APPLICATION OF UNSUITABILITY CRITERIA, BULL MOUNTAIN COAL FIELD, 20:1	A-25
2.5: APPLICATION OF UNSUITABILITY CRITERIA, BULL MOUNTAIN COAL FIELD, 10:1	A-26
2.6: AREAS SENSITIVE TO OIL AND GAS LEASING	A-27
2.7: LAND TENURE PROPOSAL TRACTS	A-28
2.8: AREAS WITHDRAWN OR PROPOSED FOR WITHDRAWAL	A-35
2.9: SUMMARY OF CURRENT GRAZING CAPACITY FOR WILD HORSES	A-36
2.10: SUMMARY OF LONG-TERM POTENTIAL FOR WILD HORSES	A-40
3.1: PHYSICAL PROPERTIES OF SOILS	A-44
3.2: DESCRIPTION OF RIPARIAN ZONES AND WOODY TYPES IN THE BILLINGS RESOURCE AREA	A-46
3.3: SUITABILITY GUIDE FOR RANGELAND MECHANICAL TREATMENTS	A-47
3.4: SELECTION OF LAND TREATMENT BY RANGE SITE	A-48
3.5: MEMO ON ADMINISTRATION ON PMWHR BETWEEN WYOMING AND MONTANA	A-50
3.6: STATE ECOSYSTEM/LANDFORM REPRESENTATION EXISTING IN STATUTORY WILDERNESS	A-52
3.7: PROXIMITY TO POPULATION CENTERS	A-53
3.8: STATEWIDE WILDERNESS STATUS SUMMARY	A-54
3.9: METHODOLOGY FOR ASSESSING RANCH RELATED ECONOMIC IMPACTS	A-58
4.1: METHODOLOGY FOR GRAZING MANAGEMENT	A-59
4.2: METHODOLOGY FOR RATING GRAZING MANAGEMENT RESPONSE	A-61
4.3: METHODOLOGY FOR WILD HORSE MANAGEMENT	A-69
4.4: METHODOLOGY FOR WILDLIFE MANAGEMENT PROGRAM	A-70
4.5: METHODOLOGY OF TIMBER MANAGEMENT	A-71
4.6: METHODOLOGY USED TO DETERMINE IMPACTS TO VISUAL RESOURCES	A-72
4.7: MANAGEMENT OF CULTURAL RESOURCES	A-73
4.8: METHODOLOGY FOR ECONOMIC AND SOCIAL IMPACT ASSESSMENT	A-75
4.9: METHODOLOGY FOR CONTROLLED BURNS	A-77
GLOSSARY	G-1
REFERENCES	R-1

TABLES

1.1:	SUMMARY OF ALLOTMENT CATEGORIZATION	10
1.2:	MONTANA STATE BLM POLICY ON MONITORING BY MANAGEMENT CATEGORY	10
2.1:	METHODS AND/OR TREATMENTS CONSIDERED	15
2.2:	SUMMARY OF PROPOSED MANAGEMENT	17
2.3:	SURFACE OWNER CONSULTATION AND APPLICATION OF UNSUITABILITY CRITERIA	23
2.4:	WILDERNESS SUITABILITY RECOMMENDATIONS	31
2.5:	SUMMARY OF THE FOUR ALTERNATIVES	51
2.6:	SUMMARY OF ENVIRONMENTAL CONSEQUENCES	58
3.1:	OIL PRODUCTION	72
3.2:	ANALYSIS OF COAL SAMPLES	74
3.3:	FLOW RECORDS FOR PRINCIPAL RIVERS	83
3.4:	SUMMARY OF SELECTED WATER QUALITY PARAMETERS	86
3.5:	ECOLOGICAL RANGE CONDITION	87
3.6:	OVERALL RANGE CONDITION	88
3.7:	ALLOTMENT MANAGEMENT PLANS	89
3.8:	COMMERCIAL SAW TIMBER SPECIES	91
3.9:	FOREST PRODUCT SALES SINCE 1977	91
3.10:	WILDLIFE HABITAT STATUS	94
3.11:	CULTURAL RESOURCES AND CHRONOLOGY IN THE BILLINGS RESOURCE AREA	102
3.12:	PREHISTORIC SITE DISTRIBUTION	103
3.13:	MANMADE FEATURES IN THE TWIN COULEE WSA	105
3.14:	MANMADE FEATURES IN THE PRYOR MOUNTAIN WSA	111
3.15:	MANMADE FEATURES IN THE BURNT TIMBER CANYON WSU	118
3.16:	MANMADE FEATURES IN THE BIG HORN TACK-ON WSU	121
3.17:	WILDERNESS REGIONAL ANALYSIS SUMMARY	125
3.18:	POPULATION CHARACTERISTICS BY COUNTY	125
3.19:	EMPLOYMENT BY SOURCE, 1979	126
3.20:	INCOME BY SOURCE, 1979	127
3.21:	PROJECTED AGRICULTURAL AND NON-AGRICULTURAL EMPLOYMENT FOR BILLINGS RESOURCE AREA	128
3.22:	SOCIAL WELL-BEING CHARACTERISTICS BY COUNTY	129
3.23:	ESTIMATED RANCH DEPENDENCY ON BLM GRAZING	130
3.24:	ESTIMATED RANCH INCOME BY RANCH SIZE	130
4.1:	RELATIVE LEVEL OF IMPACT TO VISUAL CLASS BY PROJECT	144
4.2:	ESTIMATED LONG-TERM RANCH ECONOMIC IMPACTS OF CONTINUATION OF EXISTING MANAGEMENT	164
4.3:	ESTIMATED IMMEDIATE RANCH ECONOMIC IMPACTS OF LOW LEVEL MANAGEMENT	174
4.4:	ESTIMATED SHORT-TERM RANCH ECONOMIC IMPACTS OF LOW LEVEL MANAGEMENT	175
4.5:	ESTIMATED LONG-TERM RANCH ECONOMIC IMPACTS OF LOW LEVEL MANAGEMENT	175
4.6:	CHANGES IN PERMIT VALUE FOR LOW LEVEL MANAGEMENT	175
4.7:	ESTIMATED RECEIPTS FOREGONE WITH THE BULL MOUNTAIN COAL FIELD	177
4.8:	ESTIMATED LONG-TERM RANCH ECONOMIC IMPACTS OF HIGH LEVEL MANAGEMENT	189

FIGURES

1.1:	GENERAL SETTING MAP	2
1.2:	C&MU CLASSIFICATIONS	7
2.1:	MAMMOTH-REHDER COAL BED	21
2.2:	McCLEARY COAL BED	22
2.3:	OFF ROAD VEHICLE USE, SHEPHERD	28
2.4:	OFF ROAD VEHICLE USE, SOUTH HILLS	29
2.5:	OFF ROAD VEHICLE USE, PRYOR MOUNTAINS	30
2.6:	ALTERNATIVE MAP—TWIN COULEE	32
2.7:	ALTERNATIVE MAP—PRYOR MOUNTAIN	33
2.8:	ALTERNATIVE MAP—BURNT TIMBER CANYON	34
2.9:	ALTERNATIVE MAP—BIG HORN TACK-ON	35
3.1:	STRATIGRAPHIC COLUMN IN THE BILLINGS RESOURCE AREA	71
3.2:	JOLIET/FROMBERG/BRIDGER COAL MAP	75
3.3:	McCLEARY-SILVERTIP COAL FIELD	76
3.4:	STILLWATER AND BEARCREEK COAL FIELDS	77
3.5:	MAMMOTH-REHDER COAL BED 20:1	79
3.6:	MAMMOTH-REHDER COAL BED 10:1	80
3.7:	PRYOR MOUNTAIN WILD HORSE RANGE	93
3.8:	GENERAL LOCATION OF FOUR WILDERNESS STUDY AREAS	104
3.9:	TWIN COULEE WILDERNESS STUDY AREA	106
3.10:	PRYOR MOUNTAIN WILDERNESS STUDY AREA	110
3.11:	BURNT TIMBER CANYON WILDERNESS STUDY UNIT	117
3.12:	BIG HORN TACK-ON WILDERNESS STUDY UNIT	120
3.13:	ALL AGENCIES WILDERNESS STUDY STATUS—PRYOR MOUNTAINS	124
4.1:	POPULATION IMPACT TO FROMBERG	176