

TABLE OF CONTENTS

Headwaters Draft RMP/EIS

| | |
|--|-----|
| SUMMARY | i |
| INTRODUCTION | 1 |
| Purpose and Need | 1 |
| Planning Process Overview | 1 |
| ISSUES AND CRITERIA | 5 |
| Issue-Driven Planning | 5 |
| Issues Addressed in the Headwaters RMP | 5 |
| Planning Criteria | 13 |
| ALTERNATIVES, INCLUDING THE PROPOSED ACTION | 17 |
| Alternative Formulation Overview | 17 |
| Alternatives Eliminated from Detailed Study | 17 |
| Delineation of Management Units | 18 |
| Management Guidance Common to all Alternatives | 19 |
| Alternatives Considered in Detail | 30 |
| Comparison of Alternatives | 42 |
| Selection of the Preferred Alternative | 51 |
| AFFECTED ENVIRONMENT | 55 |
| Setting | 55 |
| Soil and Water Resources | 56 |
| Energy and Minerals | 57 |
| Lands | 62 |
| Recreation Resources | 66 |
| Visual Resources | 67 |
| Cultural Resources | 67 |
| Paleontological Resources | 69 |
| Wilderness Resources | 69 |
| Timber Resources | 86 |
| Range Resources | 86 |
| Fish and Wildlife Habitat | 89 |
| Social and Economic Conditions | 100 |
| ENVIRONMENTAL CONSEQUENCES | 109 |
| Alternative A | 109 |
| Alternative B | 132 |
| Alternative C | 138 |
| Alternative D | 149 |
| CONSULTATION AND COORDINATION | 159 |
| Consistency | 159 |
| Public Participation | 159 |
| Agencies and Organizations Consulted | 160 |
| Distribution | 160 |

| | |
|--|-----|
| LIST OF PREPARERS | 163 |
| APPENDIXES | |
| APPENDIX A: DESCRIPTION OF MANAGEMENT UNITS | 168 |
| APPENDIX B: OIL AND GAS LEASING PROCEDURES | 186 |
| Processing of Lease Applications | 186 |
| Standard Stipulations for Oil and Gas Leases | 200 |
| Special Stipulations for Oil and Gas Leases | 206 |
| APPENDIX C: GENERAL BEST MANAGEMENT PRACTICES | 212 |
| Road System | 212 |
| Silvicultural | 213 |
| Chemical Handling | 213 |
| APPENDIX D: SUMMARY OF ALLOTMENT CONDITIONS AND AUTHORIZED USE | 214 |
| APPENDIX E: OPPORTUNITIES FOR ALLOTMENTS | 222 |
| APPENDIX F: RANGE DEVELOPMENTS | 235 |
| Structural Improvements | 235 |
| Nonstructural Improvements | 235 |
| Standard Operating Procedures | 236 |
| APPENDIX G: GRAZING SYSTEMS | 238 |
| Rest-rotation Grazing | 238 |
| Deferred Rotation Grazing | 238 |
| Deferred Grazing | 238 |
| Alternate Grazing | 238 |
| Short-duration, High-intensity Grazing | 238 |
| APPENDIX H: APPLICATION OF CRITERIA FOR ASSESSING WHETHER FEDERAL LANDS ARE UNSUITABLE FOR ALL OR CERTAIN STIPULATED METHODS OF COAL MINING | 239 |
| Criteria | 239 |
| Finding | 243 |
| Rationale | 243 |
| APPENDIX I: MONITORING AND EVALUATION | 245 |
| APPENDIX J: SIGNIFICANT SOILS IN THE HEADWATERS RESOURCE AREA | 246 |
| APPENDIX K: SUMMARY OF WILDERNESS STATUS THROUGHOUT MONTANA | 255 |
| APPENDIX L: DETAILED DISCUSSION OF AREAS BEING STUDIED FOR WILDERNESS | 259 |
| Introduction | 259 |
| Alternatives, Including the Proposed Action | 265 |
| Affected Environment | 268 |
| Environmental Consequences | 288 |
| APPENDIX M: METHODOLOGY USED IN THE RANGE ANALYSIS | 293 |
| Methodology for Vegetative Inventory | 293 |
| Allotment Categorization | 294 |
| Grazing Management Problems, Opportunities, and Objectives | 294 |
| APPENDIX N: SHORT-TERM CHANGES IN STOCKING RATES FOR ALLOTMENTS | 296 |
| APPENDIX O: OIL AND GAS IMPACTS MODEL | 299 |
| APPENDIX P: RANCH BUDGETS AND METHODOLOGY FOR ASSESSING RANCH-RELATED IMPACTS | 300 |
| APPENDIX Q: IMPACTS OF COAL DEVELOPMENT IN CASCADE COUNTY | 306 |
| APPENDIX R: WILDERNESS STUDY POLICY AND PLANNING CRITERIA | 310 |
| APPENDIX S: ECOSYSTEM REPRESENTATION | 312 |
| GLOSSARY | 315 |
| REFERENCES | 320 |
| INDEX | 323 |

LIST OF FIGURES, MAPS, AND TABLES

Figures

INTRODUCTION

| | | |
|-----|---|---|
| I-1 | Steps in the Resource Management Planning Process | 3 |
|-----|---|---|

CHAPTER 3

| | | |
|-----|--|----|
| 3-1 | Satisfactory Riparian and Aquatic Habitat | 90 |
| 3-2 | Unsatisfactory Riparian and Aquatic Habitat | 90 |
| 3-3 | Amount And Condition of Grizzly Bear Habitat | 93 |
| 3-4 | Average Dietary Components For Grizzly Bear and Cattle | 94 |

CHAPTER 4

| | | |
|-----|--|-----|
| 4-1 | Alternative A: Long-term Changes in Vegetative Condition | 117 |
| 4-2 | Riparian Habitat Condition | 121 |
| 4-3 | Alternative B: Long-term Changes in Vegetative Condition | 135 |
| 4-4 | Alternative C: Long-term Changes in Vegetative Condition | 142 |
| 4-5 | Alternative D: Long-term Changes in Vegetative Condition | 151 |

Maps

INTRODUCTION

| | | |
|--|--------------------|---|
| | Location Map | 2 |
|--|--------------------|---|

CHAPTER 1

| | | |
|--|---|----|
| | Oil and Gas Leasing and Development | 6 |
| | Grazing Allotment and Riparian Habitat Management | 6 |
| | Wilderness Study Recommendations | 8 |
| | Forest Management | 9 |
| | Land Ownership Adjustments | 10 |
| | Mineral Exploration and Development | 10 |
| | Motorcycle Use Areas | 11 |
| | Motorized Vehicle Access | 11 |
| | Utility and Transportation Corridors | 12 |
| | Coal Leasing | 12 |
| | Special Designations | 14 |

CHAPTER 2

| | | |
|--|---|----|
| | Blind Horse Creek Alternatives | 33 |
| | Chute Mountain Alternatives | 34 |
| | Deep Creek/Battle Creek Alternatives | 35 |
| | Black Sage Alternatives | 36 |
| | Yellowstone River Island Alternatives | 37 |
| | Sleeping Giant Area of Critical Environmental Concern | 41 |
| | Scratchgravel Hills Proposed Mineral Withdrawal | 44 |

CHAPTER 3

| | | |
|--|---|----|
| | Major Drainage Basins and Subbasins | 58 |
| | Rocky Mountain Overthrust Belt and Boulder Batholith | 59 |
| | Great Falls Coal Field | 61 |
| | Scratchgravel Hills Mineral Potential/Mining Claims | 63 |
| | Percent of Public Surface Ownership For Each County | 64 |
| | Percent of Public Subsurface Ownership (All Minerals) For Each County | 64 |
| | Major Utility and Transportation Corridors | 65 |
| | Class A Scenery | 68 |
| | Regional Wilderness Opportunities | 72 |
| | Blind Horse Creek Topographic Map | 76 |
| | Chute Mountain Topographic Map | 79 |

| | |
|---|-----|
| Deep Creek/Battle Creek Topographic Map | 81 |
| Black Sage Topographic Map | 83 |
| Yellowstone River Island Topographic Map | 85 |
| Commercial Forest Land | 87 |
| Rocky Mountain Front Grizzly Bear | 92 |
| Rocky Mountain Front Gray Wolf/Bighorn Sheep | 95 |
| Elk and Mule Deer Winter/Spring Concentration Areas | 98 |
| Rocky Mountain Front Mule Deer/Elk | 99 |
| Percent Change in Population 1970-1980 | 102 |
| Percent Change in Rural Population 1970-1980 | 102 |
| Percent Change in Urban Population 1970-1980 | 102 |
| Percent Change in Housing Units 1970-1980 | 103 |
| Percent Change in Total Employment 1975-1980 | 103 |
| Percent Change in Per Capita Income 1975-1980 | 103 |

MAP PACKET

| | |
|--|--|
| Oil and Gas Leasing Stipulations: Alternative A | |
| Special Designations: Alternative A | |
| Oil and Gas Leasing Stipulations: Alternative B | |
| Oil and Gas Leasing Stipulations: Alternative C | |
| Special Designations and Wilderness Recommendations: Alternative C | |
| Oil and Gas Leasing Stipulations: Alternative D | |
| Land Status Headwaters Resource Area | |
| Oil and Gas Activity on the Rocky Mountain Front | |

Tables

CHAPTER 2

| | | |
|------|---|----|
| 2-1 | Unleased Tracts to Remain Unleased | 26 |
| 2-2 | Seasonal Wildlife Restrictions | 29 |
| 2-3 | Summary of Oil and Gas Leasing and Development Guidelines | 31 |
| 2-4 | Summary of Grazing Allotment and Riparian Habitat Guidelines | 32 |
| 2-5 | Summary of Estimated Range Improvements | 32 |
| 2-6 | Summary of Wilderness Study Recommendations | 38 |
| 2-7 | Summary of Forest Management Guidelines | 38 |
| 2-8 | Summary of Land Ownership Adjustment Guidelines | 38 |
| 2-9 | Summary of Mineral Exploration and Development Guidelines | 39 |
| 2-10 | Summary of Motorcycle Use Guidelines | 39 |
| 2-11 | Summary of Motorized Vehicle Access Guidelines | 40 |
| 2-12 | Summary of Utility and Transportation Corridor Guidelines | 40 |
| 2-13 | Summary of Coal Leasing Guidelines | 40 |
| 2-14 | Summary of Special Designations | 42 |
| 2-15 | Comparison of Alternatives: Summary of Allocations/Outputs by Issue | 47 |
| 2-16 | Comparison of Alternatives: Summary of Environmental Consequences | 48 |

CHAPTER 3

3-1 Public Land Acreage By County 62
3-2 Areas Being Studied for Wilderness in the Headwaters Resource Area 70
3-3 Regional Wilderness Opportunities 71
3-4 Proximity of Wilderness to Population Centers 71
3-5 Existing and Proposed Wilderness Areas and Areas Under Wilderness Study 74
3-6 Percentage of Land Affected by Wilderness or Wilderness Study 74
3-7 Commercial Forest Land and Woodland by County 86
3-8 Existing AMP Allotments 88
3-9 Amount and Condition of Major Wildlife Habitat Areas 97
3-10 Agricultural and Nonagricultural Job Projections 104
3-11 Affected Permittees and Dependency 106
3-12 Ranch Income and Permit Value 106

CHAPTER 4

4-1 Impacts From Disposal 113
4-2 Impacts From Acquisition 113
4-3 Changes in Grazing Preference: Alternative A 117
4-4 Long-term Wildlife Habitat Changes Resulting From Grazing Allotment
and Riparian Habitat Management: Alternative A 119
4-5 Changes in Income From Reductions in Stocking Rates: Alternative A 128
4-6 Changes in Income From Increases in Stocking Rates: Alternative A 128
4-7 Impacts on Permittees: Alternative A 128
4-8 Social and Economic Effects of Land Ownership Adjustments 130
4-9 Changes in Grazing Preference: Alternative B 134
4-10 Long-term Wildlife Habitat Changes Resulting from Grazing Allotment
and Riparian Habitat Management: Alternative B 136
4-11 Changes in Grazing Preference: Alternative C 142
4-12 Long-term Wildlife Habitat Changes Resulting From Grazing Allotment
and Riparian Habitat Management: Alternative C 144
4-13 Changes in Income From Reductions in Stocking Rates: Alternative C 148
4-14 Impacts on Permittees: Alternative C 148
4-15 Changes in Grazing Preference: Alternative D 150
4-16 Long-term Wildlife Habitat Changes Resulting From Grazing Allotment
and Riparian Habitat Management: Alternative D 154
4-17 Changes in Income From Reductions in Stocking Rates: Alternative D 156
4-18 Changes in Income From Increases in Stocking Rates: Alternative D 157
4-19 Impacts on Permittees: Alternative D 157

CHAPTER 6

6-1 Headwaters RMP/EIS Team 163
6-2 Montana State Office Support Team 165