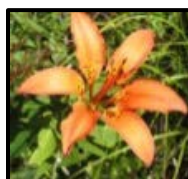


ANALYSIS OF THE MANAGEMENT SITUATION

Lewistown Resource Management Plan Revision & Environmental Impact Statement



September 2014

**Bureau of Land Management
Lewistown Field Office
920 Northeast Main
Lewistown, MT 59457**
Visit our website at: <http://blm.gov/ngld>



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TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION.....	1
1.1 PURPOSE OF THE ANALYSIS OF MANAGEMENT SITUATION (AMS)	2
1.2 PURPOSE AND NEED OF THE RMP REVISION.....	3
1.3 OVERVIEW OF THE BLM PLANNING PROCESS.....	4
1.4 GENERAL DESCRIPTION OF THE PLANNING AREA, GEOGRAPHIC SCOPE, AND RESOURCE PROGRAMS	7
1.5 KEY FINDINGS.....	10
CHAPTER 2 AREA PROFILE	27
RESOURCES	
2.1 AIR RESOURCES AND CLIMATE CHANGE	28
2.2 GEOLOGY	40
2.3 SOIL RESOURCES	43
2.4 WATER RESOURCES	50
2.4.1 Groundwater Resources	50
2.4.2 Surface Water Resources.....	57
2.5 VEGETATIVE COMMUNITIES	70
2.5.1 Rangelands/Uplands	72
2.5.2 Forest/Woodlands	75
2.5.3 Riparian-Wetland Communities	80
2.5.4 Special Status Species (Plants)	87
2.5.5 Invasive Plant Species	93
2.6 FISH AND WILDLIFE	98
2.6.1 Fish and Aquatic Communities	98
2.6.2 Aquatic Nuisance Species	109
2.6.3 Wildlife and Habitat	110
2.6.4 Special Status Species (Wildlife)	117
2.6.5 Invertebrate Species	122

2.6.6	Animal Pathogens	122
2.7	WILDLAND FIRE ECOLOGY	127
2.8	CULTURAL AND HERITAGE RESOURCES	138
2.9	PALEONTOLOGICAL RESOURCES.....	144
2.10	VISUAL RESOURCES.....	150
2.11	WILDERNESS CHARACTERISTICS	155
2.12	CAVE AND KARST RESOURCES.....	159
RESOURCE USES		
2.13	MINERALS AND ENERGY RESOURCES.....	161
2.13.1	Energy Solid Leasable Minerals	161
2.13.2	Oil and Gas Leasables	161
2.13.3	Nonenergy Solid Leasable Minerals.....	170
2.13.4	Locatable Minerals.....	170
2.13.5	Salable Minerals.....	175
2.14	LIVESTOCK GRAZING	176
2.15	RECREATION AND VISITOR SERVICES	179
2.16	TRAVEL, TRANSPORTATION MANAGEMENT, AND ACCESS.....	185
2.16.1	Comprehensive Trails and Travel Management.....	185
2.16.2	Access.....	192
2.17	LANDS AND REALTY	192
2.17.1	Land Use Authorizations	193
2.17.2	Land Tenure	197
2.17.3	Utility Corridors and Communication Sites	200
2.18	RENEWABLE ENERGY	201
2.19	WITHDRAWALS	205
2.20	FOREST, WOODLAND, AND SPECIAL PRODUCTS.....	206

SPECIAL DESIGNATIONS

2.21 AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECs).....	207
2.22 BACK COUNTRY BYWAYS.....	212
2.23 NATIONAL TRAILS.....	212
2.24 WILD AND SCENIC RIVERS (WSRs)	217
2.25 WILDERNESS STUDY AREAS (WSAs)	219
2.26 OUTSTANDING NATURAL AREAS (ONAS)	221

SOCIAL AND ECONOMIC

2.27 SOCIAL AND ECONOMIC CONDITIONS	222
2.28 TREATY RIGHTS AND TRIBAL INTERESTS	233
2.29 ENVIRONMENTAL JUSTICE	234
2.30 PUBLIC SAFETY	235

CHAPTER 3 CURRENT MANAGEMENT DIRECTION 237

3.1 RELEVANT PLANS AND AMENDMENTS	238
3.2 MANAGEMENT DECISIONS	239

RESOURCES

3.2.1 Air Resources and Climate Change	239
3.2.2 Geology	241
3.2.3 Soil Resources	241
3.2.4 Water Resources.....	242
3.2.4.1 Groundwater Resources	242
3.2.4.2 Surface Water Resources	243
3.2.5 Vegetative Communities.....	248
3.2.5.1 Rangelands	248
3.2.5.2 Forest/Woodlands	253
3.2.5.3 Riparian-Wetland Communities	254
3.2.5.4 Special Status Species (Plants).....	261
3.2.5.5 Invasive Plant Species	261

3.2.6	Fish and Wildlife.....	262
3.2.6.1	Fish and Aquatic Communities	262
3.2.6.2	Aquatic Nuisance Species	264
3.2.6.3	Wildlife and Habitat.....	264
3.2.6.4	Special Status Species (Wildlife)	268
3.2.6.5	Invertebrate Species.....	269
3.2.6.6	Pathogens and Pest Species	269
3.2.7	Wildland Fire Ecology and Management.....	269
3.2.8	Cultural and Heritage Resources	275
3.2.9	Paleontological Resources	277
3.2.10	Visual Resources	278
3.2.11	Wilderness Characteristics.....	279
3.2.12	Cave and Karst Resources	279

RESOURCE USES

3.2.13	Minerals and Energy Resources.....	280
3.2.13.1	Solid Leasables.....	280
3.2.13.2	Oil and Gas Leasables	281
3.2.13.3	Nonenergy Solid Leasables.....	282
3.2.13.4	Locatable Minerals	283
3.2.13.5	Salable Minerals	283
3.2.14	Livestock Grazing Management.....	284
3.2.15	Recreation and Visitor Services	285
3.2.16	Travel, Transportation Management, and Access	288
3.2.17	Lands and Realty	292
3.2.17.1	Land Use Authorizations.....	292
3.2.17.2	Land Tenure.....	293
3.2.17.3	Utility Corridors and Communications Sites.....	294
3.2.18	Renewable Energy	295

3.2.19	Withdrawals	296
3.2.20	Forest, Woodland, and Special Products	296
SPECIAL DESIGNATIONS		
3.2.21	Areas of Critical Environmental Concern (ACECs)	299
3.2.22	Back Country Byways	302
3.2.23	National Trails	302
3.2.24	Wild and Scenic Rivers (WSRs)	304
3.2.25	Wilderness Study Areas (WSAs)	304
3.2.26	Outstanding Natural Areas (ONAs)	305
SOCIAL AND ECONOMIC		
3.2.27	Social and Economic Conditions	306
3.2.28	Treaty Rights and Tribal Interests	306
3.2.29	Environmental Justice	307
3.2.30	Public Safety	307
3.2.30.1	Abandoned Mine Lands	307
3.2.30.2	Geological Hazards	307
3.2.30.3	Hazardous Materials	307
CHAPTER 4 MANAGEMENT OPPORTUNITIES		309
4.0	MANAGEMENT OPPORTUNITIES/MANAGEMENT ADEQUACY	310
4.1	DESIRED CONDITIONS AND ABILITY TO MEET RESOURCE DEMANDS	310
RESOURCES		
4.1.1	Air Resources and Climate Change	310
4.1.2	Geology	311
4.1.3	Soil Resources	311
4.1.4	Water Resources	312
4.1.4.1	Groundwater Resources	312
4.1.4.2	Surface Water Resources	314

4.1.5	Vegetative Communities.....	322
4.1.5.1	Rangelands	322
4.1.5.2	Forest/Woodlands	323
4.1.5.3	Riparian-Wetland Communities	324
4.1.5.4	Special Status Species (Plants).....	334
4.1.5.5	Invasive Plants	334
4.1.6	Fish and Wildlife.....	338
4.1.6.1	Fish and Aquatic Communities	338
4.1.6.2	Wildlife and Habitat.....	349
4.1.6.3	Special Status Species (Wildlife)	351
4.1.6.4	Invertebrates	351
4.1.6.5	Pathogens	351
4.1.7	Wildland Fire and Ecology	351
4.1.8	Cultural and Heritage Resources	354
4.1.9	Paleontological Resources	356
4.1.10	Visual Resources	357
4.1.11	Wilderness Characteristics.....	359
4.1.12	Cave and Karst Resources	361

RESOURCE USES

4.1.13	Minerals and Energy Resources.....	362
4.1.13.1	Solid Leasables.....	362
4.1.13.2	Oil and Gas Leasables	363
4.1.13.3	Nonenergy Solid Leasables	364
4.1.13.4	Locatable Minerals	364
4.1.13.5	Salable Minerals	365
4.1.14	Livestock Grazing	366
4.1.15	Recreation and Visitor Services	367
4.1.16	Travel, Transportation Management, and Access	370

4.1.17	Lands and Realty	370
4.1.17.1	Land Use Authorizations.....	371
4.1.17.2	Land Tenure	372
4.1.17.3	Utility Corridors and Communication Sites	372
4.1.18	Renewable Energy	373
4.1.19	Withdrawals.....	374
4.1.20	Forest, Woodland, and Special Products	374
SPECIAL DESIGNATIONS		
4.1.21	Areas of Critical Environmental Concern (ACECs)	375
4.1.22	Back Country Byways.....	384
4.1.23	National Trails	384
4.1.24	Wild and Scenic Rivers (WSRs).....	385
4.1.25	Wilderness Study Areas (WSAs).....	386
4.1.26	Outstanding Natural Areas (ONAs)	387
SOCIAL AND ECONOMIC		
4.1.27	Social and Economic Conditions	387
4.1.28	Treaty Rights and Tribal Interests.....	387
4.1.29	Environmental Justice	388
4.1.30	Public Safety.....	388
CHAPTER 5 CONSISTENCY/COORDINATION WITH OTHER PLANS		389
5.1	CITY/COUNTY PLANS	390
5.2	STATE PLANS	391
5.3	OTHER FEDERAL AGENCY PLANS.....	392
5.4	COOPERATING AGENCIES	393
5.5	RESOURCE ADVISORY COUNCIL	396

CHAPTER 6 SPECIFIC MANDATES AND AUTHORITY	397
6.1 FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND POLICIES THAT APPLY TO ALL RESOURCES AND RESOURCE USES	399
6.1.1 Federal Laws, Statutes, and Orders	399
6.1.2 Regulations	399
6.1.3 Manuals, Handbooks, and Technical References	399
6.2 STATE LAWS AND REGULATIONS	400
CHAPTER 7 SUMMARY OF SCOPING.....	419
CHAPTER 8 LIST OF PREPARERS.....	425
CHAPTER 9 ACRONYMS AND GLOSSARY	429
CHAPTER 10 REFERENCES.....	475

LIST OF TABLES

1-1	Land Ownership within the Lewistown RMP Planning Area
1-2	Mineral Ownership within the Lewistown RMP Planning Area
2-1	Normal Temperature, Precipitation, and Wind Data
2-2	Montana and National Ambient Air Quality Standards
2-3	Class I Areas in or near the Planning Area
2-4	Major Land Resource Areas in the Planning Area
2-5	Water and Wind Erosion Hazard Ratings for the Lewistown Planning Area in Acres
2-6	Reclamation Suitability on BLM Lands in Montana
2-7	Surficial Aquifer Quantity and Quality
2-8	Bedrock Aquifer Quantity and Quality
2-9	Points of Diversion for Wells and Springs by Land Ownership
2-10	Amount of BLM-administered Lands Located within Source Water Protection Areas
2-11	Planning Area Land Ownership in the Major Hydrologic Basins and Associated Subbasins
2-12	Basin Closures within the Planning Area
2-13	CMR Instream Flow Rights and Monthly Flow Statistics
2-14	Developed Pits/Dams/Reservoirs, Springs, and Wells within the Planning Area
2-15	Size and Count of Assessment Units Assigned to Reporting Categories 4C and 5
2-16	NVCS Macrogroup Classes within the Planning Area
2-17	NVCS Standard Macrogroups (Rangelands)
2-18	NVCS Standard Macrogroups (Forest/Woodlands)
2-19	NVCS Riparian-Wetland Classes
2-20	National Wetland Inventory Riparian-Wetland Types
2-21	Functional Condition of Lotic Riparian Systems
2-22	Sensitive Plant Species in the Planning Area
2-23	Montana Noxious Weed List
2-24	Montana Noxious Weeds by County
2-25	Nongame Fish Species in the Planning Area
2-26	Game Species in the Planning Area
2-27	Sport Fish Reservoirs Managed by or Accessed through BLM
2-28	Montana BLM Sensitive Fish Species
2-29	Number of Recorded and Potential Species within the Lewistown Planning Area
2-30	Game Species within the Lewistown Planning Area
2-31	Region 4 and Statewide Elk Population Estimates from 2008-2013
2-32	Region 4 and Statewide Deer Population Estimates from 2008-2013
2-33	Region 4 and Statewide Antelope Population Estimates from 2008-2013
2-34	Threatened, Endangered, Proposed, or Candidate Wildlife Species in the Planning Area
2-35	BLM Surface and Subsurface Ownerships within Grizzly Bear Conservation Zones
2-36	BLM Surface and Federal Mineral Ownerships within Greater Sage-grouse Habitat
2-37	Active Greater Sage-grouse Leaks within the Yellowstone Watershed and Belt Mountains Populations 2012-2013
2-38	Summary Breeding Bird Survey Trends in Bird Conservation Regions 10 and 17
2-39	Fire Regime Condition Classes and Potential Risks
2-40	BLM-reported Fires in the Planning Area Between 1980-2012

LIST OF TABLES

2-41	Fire Management Unit (FMU) Categories in the Fire Management Plan
2-42	Fire Management Units within the Planning Area
2-43	Fuels Treatments from 2000-2013
2-44	Fire Regime and Condition Class (FRCC) per Fuel Model
2-45	Cultural Resource Statistics for the Planning Area
2-46	Cultural Resource Sites, Regardless of National Register (NR) Eligibility, by County
2-47	Recent Proactive (Section 110) and Large-scale Compliance (Section 106) Inventory
2-48	Potential Fossil Yield Classification Condition Classification Comparisons
2-49	Geological Formations with PFYC Class (3-5)
2-50	Percentage of the Total Number of Paleontological Localities Identified by County within the Lewistown Planning Area
2-51	Acres of VRI Classes within the Lewistown Planning Area
2-52	Lands with Potential Wilderness Characteristics
2-53	Potential Areas Eliminated from Possible Wilderness Characteristics Consideration
2-54	Oil and Gas Fields by County in the Lewistown Planning Area (Field [Oil, Gas, or Both], Year of Discovery, and General Legal Location)
2-55	Baseline Projections for Future Newly Producing Oil and Gas Wells and Production in the Lewistown Planning Area
2-56	Unpatented Mining Claims
2-57	Gold and Silver Prices (1992-2012)
2-58	Summary of AUMs by County and Preference Code in the Planning Area (Calendar Year 2013)
2-59	Recreation Opportunity Spectrum (ROS) Classes
2-60	Recreation Sites within the Planning Area
2-61	BLM Road Maintenance Levels
2-62	BLM Road Type Descriptions
2-63	Existing ROWs in the Planning Area
2-64	Wind Potential Categories within the Planning Area
2-65	Stream Segments Eligible for Suitability Study (Western Half of Planning Area)
2-66	Population Change, 2000-2012
3-1	Planning Documents and Decisions within the Lewistown RMP Planning Area
3-2	Reservoirs Identified for Fisheries on BLM Land
3-3	Condition and Status of Stocked Reservoirs on BLM
3-4	Seasonal Wildlife Restrictions
4-1	Preventative Measures by BLM Activity
5-1	Cooperating Agency Participation (as of January 2014)

LIST OF FIGURES

1-1	Overview of the BLM Planning Process
1-2	Lewistown RMP General Schedule
1-3	Lewistown RMP Planning Area Map
2-1	Carbon Dioxide Concentration Trends
2-2	Global Temperature Increases
2-3	Trend in Average Annual Temperature
2-4	Trend in Average Maximum Temperature
2-5	Trend in Average Minimum Temperature
2-6	Trend in Annual Precipitation
2-7	Class I Area Visibility Trends
2-8	Judith River Mean Daily Discharge versus Judith River Instream Flow (160 cfs)
2-9	Arrow Creek Mean Daily Discharge versus Arrow Creek Instream Flow (5 cfs)
2-10	Annual Mean Discharge of Select Rocky Mountain Front Headwaters Rivers
2-11	Annual Mean Discharge of Select Island Mountain Range Headwaters Rivers
2-12	White-nose Syndrome Occurrence
2-13	Location of Physiographic Provinces
2-14	Percent of VRI Classes within the Lewistown Planning Area
2-15	Total Number of Wells Drilled per Decade in the Planning Area
2-16	Total Number of Wells Drilled within the Jurisdiction of the Lewistown Field Office Since 1986
2-17	Lewistown Field Office Travel Management Areas
2-18	Social and Economic Analysis Area Counties (Excluding Lewis and Clark County)
2-19	Percent Population in Urban and Rural Areas, 2010
2-20	Proportion of Total Land Area in Farms, 2007
2-21	Percent Change in Area, Total Residential Development on Private Land, 2000-2010
2-22	Population Change, 2000-2012
2-23	Analysis Area Employment Distribution
2-24	Services and Nonservices Employment History for Lewistown Field Office Area
2-25	Individuals and Families below Poverty, 2012
2-26	Eight-county Area Labor Income Distribution, 2012
4-1	Montana-Dakotas Process for Determination of Water Quality Standard

LIST OF MAPS

Map 1	Location of MLRAs
Map 2	Surficial Bedrock Aquifers
Map 3	Bedrock Aquifers
Map 4	Groundwater Well Density
Map 5	BLM Lands and Minerals Located on Recharge Areas of the Madison Aquifer
Map 6	Surface Water
Map 7	Bird Conservation Regions
Map 8	Fire Management Units within the Planning Area
Map 9	Grazing Allotments
Map 10	ACECs within the Planning Area NHT, Back Country Byways, ONAs

LIST OF APPENDICES

Appendix A	Stratigraphic Column of Central Montana
Appendix B	Dominant Soil Map Units in the Planning Area
Appendix C	Impaired Streams and PFC in the Lewistown Planning Area
Appendix D	Standards Conformance Review Determinations
Appendix E	Bureau of Land Management (BLM) Invasive Plant List
Appendix F	BLM Sensitive Species List
Appendix G	Lands With Potential Wilderness Characteristics (Unit Maps)
Appendix H	Wells in the Planning Area
Appendix I	Outstanding Natural Area (ONA) Resources and Current Resource Use Restrictions
Appendix J	Potential Fossil Yield Classification (PFYC) System
Appendix K	Best Management Practices
Appendix L	Standard Operating Procedures for Applying Herbicides

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ANALYSIS OF THE MANAGEMENT SITUATION

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CHAPTER 1

INTRODUCTION

The Bureau of Land Management (BLM), Lewistown Field Office (LFO) and Butte Field Office (BFO) are preparing a resource management plan (RMP) for the Lewistown RMP planning area (included within the RMP planning area is a small area in northern Lewis and Clark County that lies within the BFO). Within the RMP planning area, the BLM will analyze the effects of proposed management decisions under one environmental impact statement (EIS). This area was previously recognized as the Headwaters North Planning Area and the Judith Resource Area. The Lewistown RMP will not include any resources within the Upper Missouri River Breaks National Monument (UMRBNM).

The land area to be covered under the Lewistown RMP is located in the central part of the State of Montana in Cascade, Chouteau, Fergus, Judith Basin, Meagher, Petroleum, Pondera, and Teton Counties, and the northern portion of Lewis and Clark County. The Lewistown RMP planning area comprises approximately 654,025 acres of BLM-managed surface. Of the 3,598,988 acres of federal mineral estate in the planning area, 1,399,880 acres or 38.9 percent are BLM-managed minerals. Collectively, the lands that BLM administers (surface and mineral estate) are considered the “decision area.”

Management decisions are currently based on the *Headwaters RMP*, approved in July 1984, and the *Judith RMP*, approved in September 1994, as amended. Preparation of a new RMP will facilitate public understanding and provide consistent and integrated land use plan decisions for the area of jurisdiction. The RMP will be supported by National Environmental Policy Act (NEPA) analysis in an EIS.

Land use decisions developed through this RMP process will be based upon the principles of multiple use and sustained yield in accordance with the Federal Land Policy and Management Act of 1976 (FLPMA); however, not all lands may be available for all uses. Some uses may be excluded on some lands to protect resource values either by law, regulation, or decision reached through the planning process. The RMP will be prepared using the most current and best available information and with public involvement. The new RMP will establish appropriate land uses and constraints to attain desired resource condition goals and objectives, as well as provide a framework to guide subsequent management decisions.

1.1 PURPOSE OF THE ANALYSIS OF MANAGEMENT SITUATION (AMS)

The AMS is a summary document that describes the biological, physical, social, and economic components of the environment that would be affected by the decisions made as part of the RMP. The BLM prepares a summary of the AMS to:

- Examine available resource inventory data and characterize the resources that are present within the planning area.
- Portray the adequacy of existing management decisions and identify management opportunities to respond to potential resource issues and management concerns.

An analysis of the resource conditions and capabilities will provide a reference for developing the Lewistown RMP. The AMS provides the foundation for the RMP/EIS and summarizes the issues relevant to resource management; however, it is not meant to be an exhaustive review of everything known about the resources and uses/activities in the planning area. The AMS is intended to describe current conditions and trends of the resources and the resource uses/activities in the planning area. Sufficient detail is provided to create a platform for resolving planning issues through the development of alternatives. The AMS also provides a summary analysis of current management practices, including

direction from existing plans and agency policy, as well as a discussion of local resource, social, and economic conditions.

Consistent with multiple-use principles, the AMS provides the basis for formulating a reasonable range of alternatives (43 Code of Federal Regulations [CFR] 1610.4-4). The AMS will be integrated into the subsequent RMP and EIS as part of the alternatives and affected environment analysis. Alternatives presented in the RMP/EIS will draw on the management opportunities and examination of the adequacy of current management identified in this document.

1.2 PURPOSE AND NEED OF THE RMP REVISION

The purpose of the Lewistown RMP revision is to establish consolidated guidance and updated objectives and management actions for the public lands within the decision area. It will be comprehensive in nature and will address issue categories applicable within the planning area that have been identified through agency, interagency, and public scoping efforts. Potential issues that need to be addressed in the Lewistown RMP/EIS are:

- Vegetation Management (including noxious weeds and invasive species management)
- Fish and Wildlife Habitat
- Special Status Species
- Recreation and Visitor Services
- Forest Management
- Fire Management (including issues related to the wildland urban interface)
- Livestock Grazing
- Land Use Authorizations and Right-of-Way (ROW) Corridors
- Land Tenure Adjustment
- Withdrawals
- Minerals and Energy Development
- Recreation Management (including commercial special recreation permits)
- Travel Management and Access
- Special Management Area Designations (including nominations for areas of critical environmental concern (ACECs) and comments specific to existing ACECs and other special designation areas)

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that the BLM “develop, maintain, and, when appropriate, revise land use plans” (43 United States Code [USC] 1712 (a)). The BLM has deemed it necessary to revise the existing RMP for the LFO based on a number of circumstances that have changed since the preparation of the initial *Headwaters* and *Judith-Valley-Phillips (JVP) RMPs*. The LFO has identified the following needs for a plan revision:

- Consolidate the *JVP*, *Headwaters*, and associated plan amendments.
- Adjust for relocation of field office boundaries between BFO and LFO.
- Revise antiquated special designations and evaluate new and existing ACECs.
- Address a fluid management protest resolution that currently affects fluid mineral leasing within the planning area.
- Provide appropriate management for changes in the status of special status and threatened and endangered species.
- Adjust for changes in land tenure.
- Address potential for renewable energy development.

- Incorporate new data and updated resource inventories.
- Ensure consistency with Congressional mineral withdrawals within the planning area.
- Adjust for new technologies and trends in fluid minerals development.

1.3 OVERVIEW OF THE BLM PLANNING PROCESS

The process for the development, approval, maintenance, and amendment or revision of RMPs is initiated under the authority of Section 202(f) of FLPMA and Section 202(c) of the NEPA. The RMP revisions must comply with FLPMA; NEPA; Appendix C, “Program-Specific and Resource-Specific Decision Guidance Requirements,” of the Land Use Planning Handbook (BLM, 2005) for affected resource programs; the 2008 BLM NEPA Handbook (BLM, 2008); and all other applicable BLM policies and guidance. The overall objective of these planning efforts is to provide collaborative, community-based planning approaches and products to assist the BLM in revising the existing management decisions and resource allocations.

Development of the RMP represents the first tier (land use planning tier) of the two-tiered BLM planning process. As such, the RMP prescribes future management direction for the resources and uses of the BLM-administered public lands in the planning area. In turn, the RMP guides the second tier of the planning process that involves specific activity or implementation-level planning and daily operations.

Activity or implementation-level planning extends the resource and land use decisions of the RMP into site-specific management decisions for smaller geographic units of public lands within the RMP planning area. Activity planning includes such elements as grazing plans, travel plans, and interdisciplinary or coordinated activity plans. Through these plans, the BLM issues various land and resource use authorizations, identifies specific mitigation needs, and develops and implements other similar plans and actions.

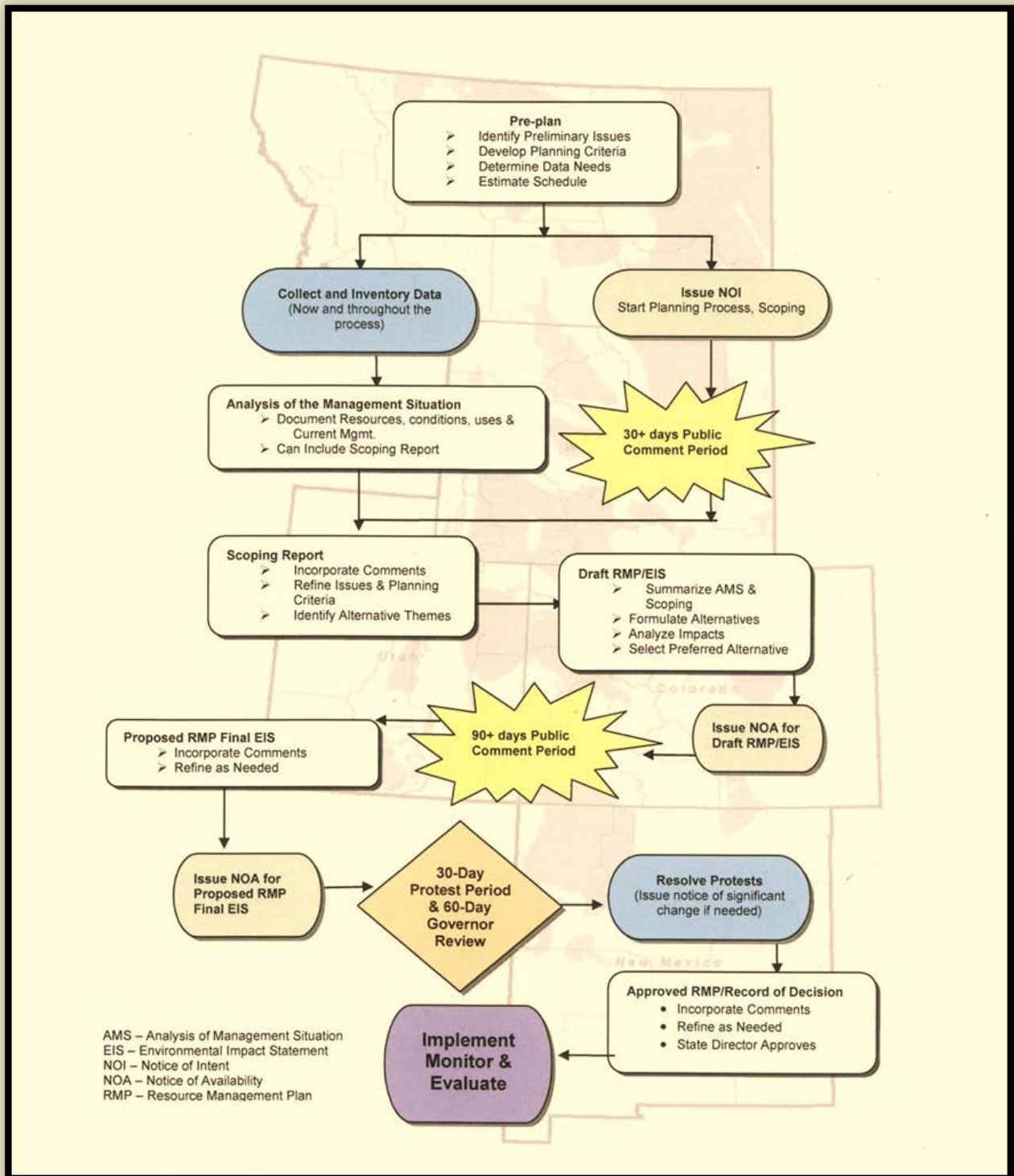
All management direction or actions developed as part of the BLM planning process are subject to valid existing rights and must meet the objectives of the BLM’s multiple-use management mandate and responsibilities (FLPMA Section 202[c] and [e]). Valid existing rights are legal rights to use the land that were in existence prior to implementation of the decisions in the RMP. The most important types of valid existing rights are oil and gas leases, mining claims, and right-of-way (ROW) authorizations. Examples of how BLM views valid existing rights, including oil and gas leasing stipulations specified for specific areas, in this new RMP would not apply to existing leases. These existing leases would be subject to the specific lease stipulations that were applied under the previous land use plan. Mining claims that exist on the effective day of a withdrawal may still be valid if they can meet the test of discovery of a valuable mineral required under the mining laws. An existing ROW would only be subject to the specific terms and conditions that were applied when it was authorized, even if it is located within a ROW exclusion or avoidance area specified under the RMP.

THE BLM PLANNING PROCESS

- Scoping and AMS preparation
 - Publish a Notice of Intent (NOI) to prepare an RMP and EIS.
 - Invite public to participate and collect public comment.
 - Prepare a scoping report.
 - Refine issues and characterize the management situation.
 - Refine planning criteria and identify planning opportunities.

- Consolidate the scoping report, issues, planning criteria, and description of the management situation in the AMS.
- Prepare a draft RMP and EIS
 - Refine issues, develop alternatives, and provide impact analysis.
 - Identify a preferred alternative and respond to public comments and protests.
 - Publish a Notice of Availability (NOA).
 - Allow a 90-day comment period.
- Prepare the proposed RMP and final EIS
 - Prepare the final EIS and proposed RMP.
 - Develop an implementation and monitoring plan for the preferred alternative.
 - Allow a 30-day protest period and a 60-day governor's consistency review.
 - Respond to public comments and protests.
- Prepare a record of decision (ROD) and an approved RMP
 - Publish the approved RMP.
 - Develop an implementation and monitoring strategy.
 - Implement, monitor, and evaluate.

Figure 1-1
Overview of the BLM Planning Process



Source: BLM 2008

Figure 1-2
Lewistown RMP General Schedule



Source: BLM, 2013.

1.4 GENERAL DESCRIPTION OF THE PLANNING AREA, GEOGRAPHIC SCOPE, AND RESOURCE PROGRAMS

The Lewistown RMP planning area is located in central Montana (see Figure 1-3). The BLM manages numerous blocks of BLM public lands within the planning area, ranging in size from less than 40 acres to a large contiguous block of public land totaling about 215,575 acres. These BLM-managed public lands are located in nine counties: Fergus, Petroleum, Chouteau, Judith Basin, Cascade, Teton, Pondera, Meagher, and the northern portion of Lewis and Clark County.

The BLM public lands to be addressed in this RMP revision include lands managed by both the LFO and BFO and total approximately 654,000 surface acres in nine counties. (Note: based on a recent administrative boundary realignment effective October 1, 2011 [published in the *Federal Register* Notice of Administrative Boundary Change, Volume 76, Number 237, 12/9/2011], about 14,537 surface acres and 749,733 acres of subsurface federal mineral estate within the northern portion of Lewis and Clark County are managed by BFO; however, for purposes of this planning effort, that portion of Lewis and Clark County will be addressed as part of this RMP revision.) The area is bordered to the west by the Lewis and Clark National Forest along the Rocky Mountain Front, to the east by the Musselshell River, to the north by the UMRBNM, and to the south by the Butte and Billings BLM Field Offices. Land ownership is mixed within the planning area (Table 1-1). The public lands managed by the BLM are adjacent to national forest, national wildlife refuge, state, private, and tribal lands. Table 1-1 identifies the acreage of the various land ownerships within the planning area. Table 1-2 identifies the mineral

estate within the planning area. Other major federal land systems in the planning area include national forest system lands, Blackfeet Indian Reservation, national wildlife refuges and waterfowl production areas, National Park Service, and US Army Corps of Engineers (CE) and Bureau of Reclamation (BOR) lands scattered throughout the planning area.

Table 1-1

Land Ownership within the Lewistown RMP Planning Area

County	Land Ownership (Surface) within the Planning Area			
	BLM	Other Federal	State	Private
Cascade County	24,732	196,340	89,796	1,414,710
Chouteau County	25,720	32,976	113,913	745,699
Fergus County	217,189	144,264	147,004	2,077,463
Judith Basin County	11,560	299,365	108,279	778,025
Lewis and Clark County*	14,537	685,795	101,832	538,844
Meagher County	7,899	471,892	93,425	959,433
Petroleum County	331,680	62,524	63,929	608,186
Pondera County	1,170	266,470	58,117	718,605
Teton County	19,538	263,975	126,215	1,057,399
Total	654,025	2,423,601	902,510	8,898,364

* Includes only the northern portion of Lewis and Clark County.

Table 1-2

Mineral Ownership within the Lewistown RMP Planning Area

County	Mineral Ownership within the Planning Area	
	Federal Minerals	Other
Cascade County	274,223	1,445,852
Chouteau County	85,900	832,408
Fergus County	660,670	1,925,250
Judith Basin County	351,149	846,080
Lewis and Clark County*	749,733	591,170
Meagher County	480,546	1,052,103
Petroleum County	442,314	624,006
Pondera County	179,568	864,837
Teton County	374,885	1,091,773
Total	3,598,988	9,273,479

*Includes only the northern portion of Lewis and Clark County.

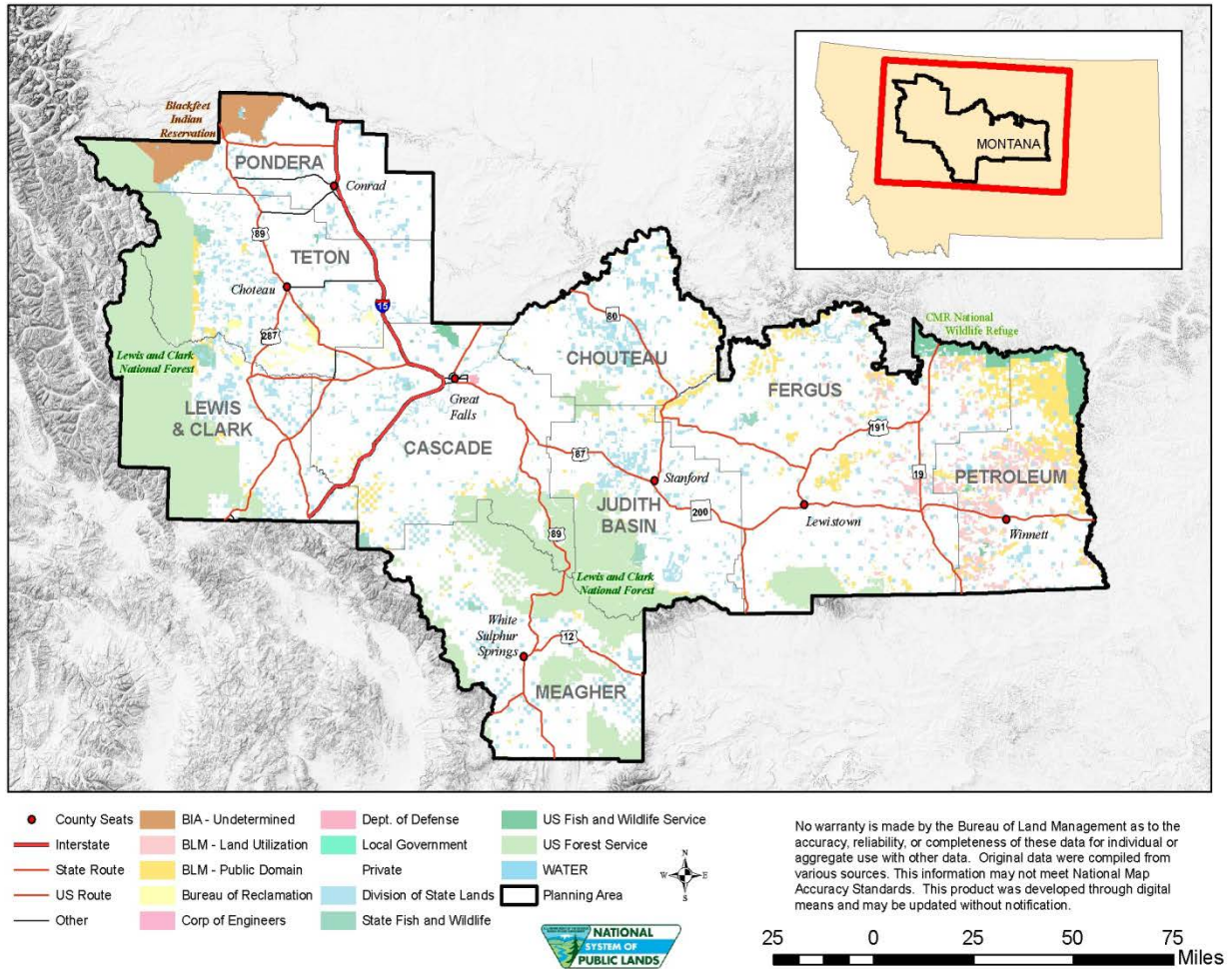
The Lewistown RMP is being prepared for all public lands and federal minerals managed by the BLM LFO and the northern half of Lewis and Clark County which is managed by the BLM BFO. The Lewistown RMP does not address US Forest Service-administered lands or federal mineral estate within national forest units. Oil and gas leasing decisions for federal mineral estate under lands administered by other federal and state agencies within the planning area will be considered in the Lewistown RMP in cooperation with those agencies.

In 2012, the Charles M. Russell National Wildlife Refuge (CMR) completed a Comprehensive Conservation Plan (CCP). Coordination between the BLM, CMR, and other agencies will continue during the planning process, especially for those resources and issues such as fire management, roads and trails, and rights-of-way that share administrative boundaries.

Major topographic features in the planning area include the Rocky Mountain Front; the Judith, North Moccasin, South Moccasin, Snowy, Highwood, Castle, Crazy, and Belt Mountains; and Square Butte. The planning area is part of the Missouri River Basin with some of the major tributary systems of the Missouri River including the Judith, Musselshell, and Sun Rivers. Each of these large drainage systems has dissected the land, forming cliffs, broad valleys, or badlands-type topography. The topography is very diverse and provides for a unique transitional environment between the Rocky Mountains of the western portion of the planning area to the vast plains and river breaks of eastern Montana with island mountain ranges punctuating the landscape. The vegetation is also diverse, from prairie grasslands and shrublands, timbered breaks, and high elevation forest types. Livestock grazing, commercial and noncommercial recreation, rights-of-way, and utilization of forest products are among the most important uses of BLM lands in the planning area.

Except for several contiguous blocks of land in Fergus and Petroleum Counties, most of the BLM public lands in the planning area are scattered tracts, intermingled with private and state lands. Private lands are usually located along the drainage bottoms and more productive uplands. The BLM manages a variety of public land parcels in the area and, as mentioned above, many of these parcels are widely scattered and often pose multiple resource management challenges. Lands managed by the LFO include public domain (lands which have never left federal ownership), acquired lands and/or mineral interests (lands and/or minerals which left federal ownership and were later returned to federal ownership through purchase, donation, or condemnation), and federal mineral estate (subsurface) lands beneath private or state lands or lands administered by other federal agencies. The Lewistown RMP will not make decisions for the surface or mineral estates of private- or state-owned lands and minerals. The Lewistown RMP, however, will provide management decisions for split estate situations involving federal minerals managed by the BLM overlain by private- or state-owned surface.

Figure 1-3
Lewistown RMP Planning Area



Source: BLM, 2012.

1.5 KEY FINDINGS

Key issues needing resolution generally result from the following four changes:

1. Revised BLM policy (e.g., establishment of major ROW corridors, cultural resource management, visual resource management [VRM]);
2. Changing resource conditions or demands (e.g., increases in public use, existence of federally listed threatened and endangered or other sensitive species);
3. New national policy direction (e.g., focus on energy development, including geothermal resources
4. Addressing emerging issues (e.g., wild and scenic rivers, designation of ACECs, and lands with wilderness characteristics).

A preliminary list of key issues to be addressed in the RMP has been compiled based on internal scoping primarily derived from local knowledge of BLM staff and managers. Anticipated planning issues and management concerns has been expanded and refined through external scoping (through BLM's involvement with local communities). The following description provides the preliminary planning issues and management concerns that were developed primarily through internal scoping. Chapter 7 provides a comprehensive summary of scoping efforts.

ANTICIPATED PLANNING ISSUES AND MANAGEMENT CONCERNS

A **Planning Issue** is identified as a matter of controversy or dispute over resource management activities or land use that is well defined or topically discrete and entails alternatives between which to choose. **Management Concerns** are topics or points of dispute that involve a resource management activity or land use. While some management concerns overlap planning issues, a management concern is generally more important to an individual or a few individuals, as opposed to a planning issue, which has more widespread point of conflict. However, certain resource values (e.g., cultural resources) will still play pivotal roles in developing alternatives and reaching decisions regarding the major issues.

The planning issues and management concerns presented below are preliminary and based on internal information prior to scoping. Comments generated from the scoping process have been analyzed to identify new issues and refine the existing preliminary issues listed below. More information on planning issues can be found by viewing the full Scoping Report located in the *Documents and Reports* Section on BLM's website at: www.blm.gov/ngld. Preparation of the RMP will afford many opportunities for collaboration with local, state, federal, and tribal governments as well as land management agencies, public interest groups, and public land users. As a result, these issues may be modified and refined to reflect new issues and concerns that are identified throughout the course of developing the RMP.

PRELIMINARY PLANNING ISSUES

The following sections identify planning issues based on RMP evaluations, new Bureau program guidance, and LFO staff input. For each issue identified, a planning question is presented, and information that will be considered in answering that question is identified. The questions and information will be refined during public scoping and throughout the planning process.

Issue: Vegetation Management

Past and current management activities, such as timber harvest, road construction, mining, recreation, and/or effects of activities on surrounding private lands continue to affect the natural function and condition of riparian areas, upland vegetation communities, and forested areas. Riparian and wetland habitats, including streams, springs, seeps, and meadow areas, are of critical importance to fish and wildlife species. Healthy riparian, upland, and forest communities have good species diversity and structural integrity, and are resilient following natural disturbances such as fire. They provide fish and wildlife habitat, soil stabilization, increased infiltration of precipitation, watershed protection, and enhance recreation and aesthetic values. The BLM *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota, and South Dakota* (Record of Decision [ROD], August 1997) identified and incorporated five specific standards into the process for evaluating rangeland health. These standards include upland health, riparian health, water quality, air quality, and habitat (biodiversity). The ROD relating to rangeland health and the subsequent standards will be incorporated into the Lewistown RMP.

Planning Questions

- How will BLM lands be managed to achieve, maintain, or improve riparian, upland, and forest communities, with an emphasis on native species restoration?
- What rangeland, forest, woodland, wetland, and riparian plant communities currently exist on the landscape and, in what amounts, and what are the desired plant communities?
- Which plant communities would be targeted for restoration activities, and where are they located?
- Which plant communities would be most affected by climate change, drought, and fire?

Preliminary Planning Considerations

- Comply with Executive Order 11990 for wetlands preservation
- Maintain, improve, and restore natural functions to benefit water storage groundwater recharge, water quality, and fish and wildlife values
- Design best management practices (BMPs) to maintain or improve resource integrity
- Provide for the protection and restoration of native species
- Provide for multiple use and sustained yield of forage for wildlife and domestic livestock
- Coordinate with Montana Fish, Wildlife and Parks (MFWP) to assure that wildlife habitat is sustained
- Incorporate *Montana Standards for Rangeland Health and Guidelines for Livestock Grazing Management*

Issue: Noxious Weeds and Invasive Species Management

Noxious weeds and other invasive plant species can affect native plants, special status species, wildlife and livestock forage, water quality, and fire management. The BLM is responsible for controlling noxious weeds on public lands and coordinating with state, county, and private landowners to reduce the establishment of undesirable plant species by implementing integrated weed management. Areas of noxious weed infestation and invasive plants are being mapped and will be used in development of the RMP. The RMP will incorporate policies and strategies detailed in the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS (Final Programmatic EIS, 2007)*. The RMP will also address additional practices or preventative measures to be applied to all resource activities and uses, such as the use of certified weed-free seed mixtures, feeds, and mulches for reclamation and restoration practices. The incorporation of the use of weed-free forage and the emphasis of restoration of disturbed areas, including specific seed mixes, will be included in all alternatives.

Planning Questions

- What actions and/or restrictions will be needed to maintain or improve natural resource values that have been affected by, or are susceptible to, noxious weeds and other undesirable plant species?
- Which plant communities are being degraded because of noxious weed or invasive species and where are they located?
- Which noxious weed and invasive species would receive highest priority for control and where are they located?
- Where in the planning area would be the highest priority for noxious weed and invasive species control?

Preliminary Planning Considerations

- Utilize the weed management guidelines and design features identified in the 2007 *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS*
- Protect nontarget and special status plant species during treatments
- Incorporate Montana Standards for Rangeland Health and Guidelines for Livestock Grazing Management
- Consider integrated weed management strategies for more effective control and eradication of undesirable plant species
- Comply with Executive Order 13112, Invasive Species (February 1999)
- Incorporate the Partners Against Weeds Strategy (PAWS) Plan

Issue: Fish and Wildlife Habitat

The planning area contains a diversity of important habitats for a variety of fish and wildlife species. Habitat quality has been modified as a result of roads, timber harvest, wildfire, fire suppression, recreation, and grazing. Where public land ownership patterns are highly fragmented, protection and/or improvement of fish and wildlife habitats is more challenging. The key to maintaining quality wildlife habitats is large blocks of diverse, healthy vegetation and plant communities. Fish habitats also require high water quality and good stream channel and riparian conditions.

Planning Questions

- How will uses and activities be managed to maintain and/or improve fish and wildlife habitats?
- What are the priority game and nongame species found in the planning area, how are they distributed, and what are their habitat requirements?
- Which native plant communities provide habitat to priority game and nongame wildlife and how are they distributed in the landscape?

Preliminary Planning Considerations

- Protect and restore fisheries habitat
- Protect native vegetative communities
- Protect and preserve genetic integrity
- Protect and maintain the intrinsic and recreational values associated with native and desirable nonnative species
- Identify habitat conditions and needs in cooperation with MFWP, Montana Department of Environmental Quality (MDEQ), and other land management agencies, including US Forest Service (FS), US Fish and Wildlife Service (FWS), Montana Department of Natural Resources and Conservation (DNRC), and the Blackfeet Indian Reservation
- Coordinate with MFWP to ensure that wildlife populations are compatible with land health objectives
- Protect important big game and upland game bird habitats
- Protect habitats for migratory birds
- Improve access to public lands that help meet state wildlife population objectives

Issue: Special Status Species

Special status species include plant, fish, and animal species designated as “endangered,” “threatened,” or “proposed” under the Endangered Species Act (ESA), or as BLM sensitive species, including Greater Sage-grouse. The planning area supports habitat for a number of federally-listed and BLM sensitive species. Habitats for special status species are affected by roads, timber sales, wildfire, grazing, recreation, and habitat fragmentation.

Planning Questions

- How will BLM manage uses and activities to ensure that activities affecting special status species are carried out in a way that is consistent with objectives for managing those species and their habitats at the appropriate spatial scale?
- What are the special status species within the planning area and what are their distribution, abundance, population condition, current threats, and habitat requirements?
- How will species populations be inventoried and monitored?

Preliminary Planning Considerations

- Follow applicable conservation agreements, strategy plans, and recovery plans
- Ensure that management actions protect BLM sensitive species and do not contribute to a trend toward federal listing or cause a loss of viability to populations or species
- Ensure that management actions do not jeopardize the continued existence of federally listed threatened or endangered species, or result in the destruction or modification of critical habitat
- Incorporate *Montana Standards for Rangeland Health and Guidelines for Livestock Grazing Management*
- Incorporate planning criteria outlined in the Special Status Species Management Manual 6840
- Conservation measures described in the *Greater Sage-grouse RMP Amendment and EIS* will be incorporated upon completion

Issue: Recreation and Visitor Services

Public lands provide for a wide array of recreation opportunities within varied settings. Outdoor recreation use levels in both developed and undeveloped recreation settings are increasing. Increased use creates an elevated demand for facilities, user information, and access. The RMP should assist the BLM in providing access to the public lands and to ensure quality environmentally responsible outdoor recreational opportunities, experiences, and benefits for the growing number of public land users.

Planning Questions

- How will resources be managed to enhance recreation experiences and quality of life?
- How will management of public lands affect the social and economic conditions of local communities?

Preliminary Planning Considerations

- Provide for and enhance recreation opportunities to accommodate use and reduce effects to other resources

- Incorporate appropriate guidance from *BLM Recreation Strategy: Connecting with Communities Years 2014-2019*
- Identify and map special recreation management areas (SRMAs), extensive recreation management areas (ERMAs), and public lands not designated as recreation management areas (NLDs)
- Consider those lands identified as SRMAs and ERMAs and those areas subject to special measures to protect resources or reduce land use conflicts
- Ensure that existing recreation facilities can be properly maintained prior to construction of new facilities

Issue: Travel Management and Access

Many tracts of public land, large and small, within the planning area have no legal access for the public. Population growth, rural and urban development, and increasing recreational activity have resulted in an increased need for access to public lands. If landowners are willing and funding is available, the BLM can negotiate and purchase easements for public access.

The Department of the Interior's (DOI's) *Strategic Plan* calls for ensuring environmentally sound public access to recreation sites on public lands. The goal of improving access to appropriate recreation opportunities is also one of the BLM's top priorities.

Motorized travel and transportation (all-terrain vehicle [ATV] and off-highway vehicle [OHV]) use has grown in popularity in some areas. The BLM has prepared new manual guidance for trails and travel management as well as the development of several strategies (i.e., the *National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands* and *National Mountain Bicycling Strategic Action Plan*) for improving the way the road and trail systems are managed on public lands. These strategies provide a foundation for the development of a comprehensive travel management program.

Planning Question

- How will transportation and public access be managed to improve access, protect resources, reduce conflicts of use, and provide motorized and nonmotorized recreation opportunities for public land visitors?

Preliminary Planning Considerations

- Comply with Section 205 of FLPMA
- Evaluate the type of, and need for, existing or proposed facilities
- Evaluate conflicts with existing or potential resource values and uses
- Consider cost benefits and the duration and assurance of title
- Comply with Executive Orders 11644 and 11989 (provide for public safety, minimize damage to soil, watershed, vegetation, and other public land resources, minimize harassment of wildlife or significant disruption of wildlife habitats, and minimize conflicts between OHV use and other existing or proposed recreational uses)
- Ensure compatibility of area OHV designations with designations and conditions on neighboring federal, state, county, and municipal subdivisions, taking into account safety, noise, and other related factors
- Incorporate appropriate guidance in *BLM Recreation Strategy: Connecting with Communities Years 2014-2019*

- Incorporate appropriate guidance from the BLM *National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands*
- Incorporate appropriate guidance from the BLM *National Mountain Bicycling Strategic Action Plan*
- Incorporate appropriate guidance from the BLM Handbook for Trails and Travel Management

Issue: Forest Management

The planning area includes forest lands that provide wildlife habitat, watershed protection, recreational and aesthetic values, and forest products. Fire suppression and harvest activities of the past century, prolonged periods of drought, and historical harvesting methods have changed the pre-settlement character of tree species composition and stand densities. This has led to an increased fire risk in these areas and led to altered disturbance processes including insects and fire in many areas. Studies of timber vegetation type and structure and timber stand plots will be used to determine existing age, structure, and composition of forest/woodland areas so that desired outcomes can be identified per the H-1601-1 Land Use Planning Handbook.

Planning Questions

- How will healthy forest ecosystems be maintained or restored?
- Where and at what harvest levels will BLM provide for forest products?
- How should the BLM address demands for "other" or "special" forest products, including commercially collecting native seeds and conservation seed collections?
- How will areas impacted by mountain pine beetle be managed to salvage resources and limit fire danger?
- How will management of BLM lands affect the social and economic conditions of local communities?

Preliminary Planning Considerations

- Consider desired composition; access; public demand for forest products; effects of drought, insects, and disease; and wildlife habitat
- Use *Inventory of Timber Production and Capability Classifications* (TPCC), and 1974 and 1992 *Forest Inventories*
- Follow *President's Healthy Forests Initiative* (August 2002) and *National Fire Plan* (2000)

Issue: Wildland Urban Interface

The planning area includes areas of expanding wildland urban interface. Within these areas, we will address opportunities to: (1) identify broad treatment levels; (2) identify general restrictions on fire management practices (suppression and fuels management) if any are needed to protect other resource values; and (3) restore fire adapted ecosystems. The RMP will also address emergency stabilization and rehabilitation activities on landscapes and communities affected by wildland fire through the use of community wildfire protection plans (CWPPs) as prescribed by requirements of the Healthy Forest Restoration Act (HFRA) and local fire management plans (FMPs).

Planning Questions

- Where and what types of fuel management activities can be used to reduce fuel accumulations in the wildland urban interface, and promote and sustain a healthy ecosystem?

- How will management of BLM lands affect the social and economic resiliency and sustainability of local communities?

Preliminary Planning Considerations

- Emphasize fuel reduction projects on public lands within priority areas identified by the communities
- Coordinate closely with communities and other adjacent owners to ensure maximum effectiveness from joint fuel reduction activities
- Where possible, use local contractors, equipment, and services to maximize the economic benefit to the community
- Incorporate guidance and direction defined in the *Federal Fire Management Policy*, the *National Fire Plan* (NFP) and associated policies and guidelines, including multi-agency collaboration for fire, fuels management, and budgeting, and the *Fire/Fuels Management Environmental Assessment Plan Amendment for the Montana/Dakotas* (2003)

Issue: Fire Management

Vegetation fuel types in the Lewistown planning area can be described as grass, shrub, and timber. Central Montana typically burned with mixed severity fires and a fire return interval of 5 to 30 years (longer in the higher elevation forest types). The past 100 years of successful fire exclusion, advancement of succession in forest ecosystems, and extended fire return intervals in shortgrass prairie and shrublands have resulted in increased fuel loadings. When added to the significant outbreaks of insects and disease in forested areas, and increasing nonnative plants in the grasslands, the result is higher potentials for increased fire size, frequency, intensity, and severity. The influx of people to the area will increase the probability of human-caused fires.

Planning Questions

- What should be the landscape level fire management goals and objectives?
- Where can fuel management activities be used to reduce fuel accumulations, and promote and sustain a healthy ecosystem?
- How can fire suppression actions be managed to minimize the adverse effects to public health and safety, private property, and resources while providing for beneficial ecological processes?
- What is the appropriate management response to naturally occurring wildfire outside the wildland urban interface?

Preliminary Planning Considerations

- Follow *National Fire Plan*, 2000
- Follow *Federal Wildland Fire Management Policy*, 1995, reaffirmed and updated 2000
- Follow BLM Manual 9214
- Follow *Interagency Standards for Fire and Aviation Operations*
- Incorporate guidance and direction defined in the *Fire Planning Manual* (MS-9211) and *Fire Planning Handbook* (H-9211-1)

Issue: Livestock Grazing

Livestock grazing in the Lewistown RMP planning area occurs within numerous intermingled allotments containing BLM and other federal lands, private, state, and grazing district lands. Percentages of BLM public lands within these allotments range from less than 10 percent to 100 percent of an overall allotment area. The LFO currently authorizes grazing on 590 grazing allotments. There are approximately 66 unallocated parcels. The BFO administers grazing on approximately 14 allotments within this planning area. Allocations and adjustments will be evaluated within alternatives, as described in Instruction Memorandum (IM) 2012-169, taking into consideration other resource values and forage demands within the planning area. Unallocated parcels will be evaluated for suitability of livestock grazing. Criteria for issuing grazing permits/leases or identifying parcels to remain unleased will be developed and incorporated into the Lewistown RMP.

The need to improve range condition; range management options when forage resources are affected by drought, insects, or fire; the need to maintain and improve wildlife habitat through the modification of livestock grazing (permitted use and season of use); recreational uses; and the need to maintain the economic stability of the local livestock industry will be considered in the plan. In addition, the Lewistown RMP will address concerns regarding rangeland health, selective management categories for individual allotments, and maintenance of social and economic factors in affected communities within the planning area.

Planning Question

- What lands will be available or not available for livestock grazing and how will livestock grazing be managed?

Preliminary Planning Considerations

- Conform with existing laws, regulations, and BLM policy pertaining to livestock grazing on public lands
- Incorporate Montana *Standards for Rangeland Health and Guidelines for Livestock Grazing Management*
- Consider ecological site inventory information
- Protect important biological resource functions that provide for soil stability, water quality, and healthy riparian and upland vegetation communities
- Provide for the protection and restoration of native species and potential natural communities
- Authorize use to minimize environmental impacts under the principles of multiple use and sustained yield

Issue: Land Tenure Adjustments

The workload and cost to manage small tracts of public lands within the planning area are high because of the scattered land ownership pattern. Many parcels of public land are less than 640 acres in size, have no legal access, and contain limited management opportunities. Land tenure adjustments through purchase, exchange, and donation have the potential to provide greater efficiencies in management, reduced workload, and reduced costs. Land tenure adjustments also allow for the acquisition of parcels with high public resource values.

Planning Question

- What opportunities exist to make adjustments to public land ownership that would result in greater management efficiency and increased public and natural resource benefits?

Preliminary Planning Considerations

- Comply with Federal Land Exchange Facilitation Act of 1988
- Comply with Sections 203 and 206 of FLPMA
- Improve public access opportunities to public lands and resources
- Improve administrative access opportunities to public lands and resources
- Maintain or enhance important resource values and uses
- Maintain or enhance local social and economic values
- Improve management efficiency and expand management opportunities through the elimination of isolated tracts and creation of “blocks” of public lands
- Review, and where appropriate, continue identification of lands for disposal

Issue: Delineation of ROW Corridors and Sites

The planning area contains a number of utility, transportation, and communication rights-of-way. The locations of some of these existing rights-of-way may or may not be suitable for expansion or development into utility corridors, communication sites, and/or wind energy sites. It is important to identify or delineate those corridors and sites in order to effectively manage the public lands and to minimize the impacts from the proliferation of separate rights-of-way.

Planning Questions

- What lands will be available for ROW corridors?
- What lands will be identified as ROW avoidance or exclusion areas based on resource values and requirements for ROW uses and commercial activities?
- What lands will be identified as potential wind development areas?

Preliminary Planning Considerations

- Public lands will generally be available for transportation, utility, and communication site rights-of-way, except: (1) where there is a need to protect other resource values; (2) areas specifically identified as avoidance and exclusion areas; or (3) where specifically prohibited by law or regulation
- Comply with Section 503 of FLPMA
- Incorporate the findings of the 1992 *Western Regional Corridor Study*, by the Western Utility Group
- Utilize existing/common rights-of-way to the extent possible, and minimize the proliferation of separate rights-of-way
- Identify public lands with existing ROW corridors that may or may not be suitable for additional rights-of-way
- Evaluate potential conflicts with existing or potential resource values and uses
- Consider VRM classifications

Issue: Minerals and Energy Development

The planning area has the potential for the development of solid minerals, fluid minerals, and energy. Mineral and energy development can affect a variety of other resources, although these effects can be reduced through carefully developed mitigations such as reclamation, hazardous materials management, avoidance areas, the use of BMPs, and mineral withdrawals.

In addition to the mineral and energy development activities, there are concerns about abandoned mine lands and the hazard abatement associated with such activities. This ongoing process involves BLM and other federal and state agencies. The planning effort will identify or mention the following, consistent with the goals and objectives for natural resources within the planning area (see Land Use Planning Handbook Appendix C, II, H):

- Areas open to leasing, subject to existing laws, regulations, and formal orders; and the terms and conditions of the standard lease form.
- Areas open to leasing, subject to moderate constraints such as seasonal and controlled surface use restrictions. These are areas where it has been determined that moderately restrictive lease stipulations may be required to mitigate impacts to other land uses or resource values.
- Areas open to leasing, subject to major constraints such as no-surface-occupancy stipulations on an area more than 40 acres in size or more than 0.25-mile in width. These are areas where it has been determined that highly restrictive lease stipulations are required to mitigate impacts to other lands or resource values. This category also includes areas where overlapping moderate constraints would severely limit development of fluid mineral resources.
- Areas closed to leasing. These are areas where it has been determined that other land uses or resource values cannot be adequately protected with even the most restrictive lease stipulations; appropriate protection can be ensured only by closing the lands to leasing. Identify whether such closures are discretionary or nondiscretionary; and if discretionary, provide the rationale.

The plan will identify, for each lease stipulation, the circumstances for granting an exception, waiver, or modification, as well as identify the general documentation requirements and any public notification associated with granting exceptions, waivers, or modifications.

The planning effort will clarify and determine whether the development decisions also apply to geophysical exploration and whether constraints identified in the land use plan for new leases also apply to areas currently under lease.

In addition, the plan will identify resource condition objectives that have been established and specific lease stipulations and general/typical conditions of approval and BMPs that will be employed to accomplish these objectives in areas open to leasing. In addition, long-term resource condition objectives will be identified for areas currently under development to guide reclamation activities prior to abandonment.

Planning Questions

- Under the principles of multiple use and sustained yield, how will mineral and energy development activities be managed to provide for products while preventing undue or unnecessary degradation to other natural resources?
- How will management of public lands affect the social and economic conditions established by mineral and energy development?
- How will management of subsurface minerals affect surface lands and resources?

Preliminary Planning Considerations

- Make public lands and federal minerals available for the exploration and development of energy and mineral resources while considering other resource values
- Identify reasonable foreseeable development potential/scenarios, as appropriate
- Identify BMPs, mitigation, and conservation measures that are necessary to minimize effects of development
- Identify areas to be withdrawn or closed to protect nonmineral or energy resource values

Issue: Special Designations

The planning unit contains a number of special designations such as the Square Butte Wilderness Study Area (WSA), outstanding natural areas (ONAs) and areas of critical environmental concern (ACECs), the Lewis and Clark National Historic Trail (NHT), the Nez Perce NHT, and the Continental Divide National Scenic Trail (NST). These special designations provide management direction specifically designed to protect the resource values for which the area was designated. There may be resources that are best protected by additional designations, and there may be designations that are no longer necessary. In addition, the streams and rivers in the *Headwaters RMP* area have not been evaluated under the wild and scenic river (WSR) guidelines.

Planning Questions

- Where are special designations appropriate to protect unique resource values?
- What other rivers in the planning area are suitable for WSR status?
- What is the nature and purposes of the Nez Perce NHT, the Lewis and Clark NHT, and the Continental Divide NST?
- What public land area will be established as national trails corridors?
- What management practices will occur to manage NSTs and NHTs so as to safeguard the nature and purposes of the trails and in manner which protects the values for which they were designated?
- What allowable uses, management actions, and necessary restrictions should be established within the national trails corridors?
- How will other BLM programs and uses be managed within the national trails management corridors?
- Are there any national trails related lands within the planning area that should be acquired?
- What level of coordination will occur to ensure the national trails corridors edgematch with adjoining BLM field offices and other agencies that administer these corridors?

Preliminary Planning Considerations

- Comply with FLPMA, Sections 201 and 202
- Evaluate all rivers and streams in the planning area for eligibility under the Wild and Scenic Rivers Act. Complete a study recommending which eligible rivers are suitable for inclusion in the National Wild and Scenic River System, in accordance with BLM Manual 8351, Wild and Scenic River Policy
- Comply with Interim Management Policy for Lands Under Wilderness Review, BLM Handbook 8550-1
- Evaluate any new areas which may be suitable for designation as ACECs
- Identify lands with wilderness characteristics
- Comply with the National Trails System Act, in accordance with BLM Manual 6280, Management of National Scenic and Historic Trails policy

MANAGEMENT CONCERNS

Management Concern: Air Resources and Climate Change

The RMP will summarize relevant background air quality and climate information associated with the planning area and identify potentially affected Class I areas as well as actions that could be taken to protect these areas. The plan will identify area-wide criteria or restrictions that would be applied to any activity authorized by the field offices to ensure compliance with local, state, federal, or tribal air quality standards and implementation plans. Authorized activities include, but are not limited to, fuels management and energy development.

Planning Question

Can contributions to climate change be reduced by limiting greenhouse gas (GHG) emissions and/or by increasing carbon storage?

Preliminary Planning Considerations

- Comply with NEPA requirements to analyze and disclose impacts to air resources, including ambient air quality and air quality related values, and impacts to climate change
- Comply with procedures in the Memorandum of Understanding (MOU) among the US Department of Agriculture (USDA), US Department of the Interior (DOI), and US Environmental Protection Agency (EPA), regarding air quality analysis and mitigation for federal oil and gas decisions through the NEPA process which was signed on July 23, 2011
- Incorporate a strategy for addressing BLM requirements under general conformity (40 CFR Part 93, Subpart B)

Management Concern: Water Quality/Quantity

Standard procedures regarding permitting practices required by federal and Montana State laws will be identified in the RMP. The BLM will work closely with MDEQ, MFWP, plus tribal, federal, and local laws regarding water quality planning and management. Data to be examined will include, but are not limited to, the MDEQ's identified impaired streams (303(d)), Montana's Streamside Management Zone Law, riparian condition, water rights, land jurisdiction, water quality, and water quantity data. The Lewistown RMP will identify and consider: BMPs that the State of Montana and its cooperators (including BLM and the FS) have developed and distributed for use by federal land managers, including particular BMPs developed for watersheds as a result of the 303(d)/Total Maximum Daily Load (TMDL) process; Standards for Rangeland Health assessments; BMPs for grazing; and existing MOUs with the State of Montana.

Management Concern: Soil Resources

Soils will be managed to maintain or improve soil health and productivity and minimize impacts to soil resources through the actions of management activities. The BMPs, mitigation measures, and reclamation will be implemented at the site-specific activity/project level to prevent or reduce soil erosion, compaction, and return soil productivity, especially, for soils with severe erosion susceptibility, sparse vegetation, shallow depths, and on steep slopes. If soil impacts cannot be mitigated or effectively controlled, then the activity/project could be relocated or denied.

The RMP will utilize available soil data to make informed decisions for a variety of resources and resource uses. State Soil Geographical Data (STATSGO) and Soil Survey Geographical Data (SSURGO) are available for all counties in the planning area.

Management Concern: Cultural Resources

The planning area contains many significant prehistoric, historic, and cultural areas. Recreational activities, unintentional trespass, theft, erosion, and vandalism are all sources of cultural resource degradation. Protection of cultural resource sites may include: identification, evaluation, monitoring, stabilization, and interpretation.

Planning Questions

- How will cultural resources needing proactive management, protection, and use be identified?
- How will sacred sites and traditional cultural places that need protection be identified?

Preliminary Planning Considerations

- Consult with tribal governments and the State Historic Preservation Office (SHPO)
- Identify and protect cultural resources and traditional cultural properties
- Protect, preserve, and enhance sites eligible or listed on the National Register of Historic Places (NRHP)

Management Concern: Tribal Treaty Rights and Trust Responsibilities

Sacred sites, cultural landscapes, traditional cultural use areas, and other trust resources within the planning unit require inventory, consultation, and protection to meet our trust responsibilities. Treaties ratified by the US Congress and federally-recognized tribes confer special legal rights to use public land. Effective consultation and coordination is the key to achieving management goals for both the tribes and the BLM.

Planning Questions

- Are potential effects to trust resources and treaty rights adequately addressed?
- What plants and animals in the planning area are typically used for traditional and/or treaty use purposes?
- How are sacred sites, cultural landscapes, and traditional cultural uses identified and protected?

Preliminary Planning Considerations

- Consult with tribal governments
- Identify and manage trust resources
- Comply with treaty rights for all associated management activities and uses

Management Concern: Tribal Interests

Under all alternatives, BLM would continue to notify and consult with appropriate American Indian tribes on BLM-authorized actions. Consultation and coordination would be conducted on a government-to-government basis with federally-recognized tribes. Management of public lands would

accommodate the exercise of rights provided by treaties or law that are applicable to the planning area. The BLM would coordinate with the appropriate entities within tribal government on issues under its jurisdiction to determine appropriate protocols that provide for treaty uses of public lands.

Planning Questions

- Who are the tribes likely to be affected? What is their recent history and likely area of interest?
- What (if any) landscape-scale issues should be identified and addressed at the land-use planning stage?
- Are there any historic and/or religious concerns that will need to be appropriately addressed under Section 106 of the National Historic Preservation Act (NHPA)?
- What are other resource concerns that would be of interest (water, vegetation, etc.)?
- Are there likely to be environmental justice issues?
- Will climate change impacts and adaptation be an issue of concern for tribes?
- Does the tribe have a Tribal Historic Preservation Officer?
- What plants and animals in the planning area are typically used for traditional and/or treaty use purposes?
- How are sacred sites, cultural landscapes, and traditional cultural uses identified and protected?

Preliminary Planning Considerations

- Consult with tribal governments
- Identify and collect information to adequately address planning issues and questions

Management Concern: Paleontological and Cave and Karst Resources

The planning area contains documented paleontological localities, as well as the potential for other cave and paleontological resources throughout the field office. These resources are only beginning to be understood and identified. Recreational activities, natural erosion, unintentional trespass, theft, and vandalism are all sources of resource degradation. Protection and management of these sites and caves includes identification, stabilization, and enhancement to maintain significant scientific, educational, and recreational values.

Planning Question

- How will the BLM manage paleontological and cave resources?

Preliminary Planning Considerations

- Identify and protect significant cave resources pursuant to 43 CFR Part 37
- Identify, protect, and manage caves and paleontological sites to maintain or enhance significant scientific, educational, wildlife, and recreational values
- Inventory and monitor paleontological resources using scientific principles and expertise in accordance with 16 USC 470aaa-1

Management Concern: Visual Resource Management (VRM)

Range management, forestry, fuels management activities, and rights-of-way for utility, transportation, and communication facilities are the primary actions affecting visual resources in the LFO planning area. The BLM is responsible for ensuring that the scenic values of public lands are considered in all proposed actions that may affect visual quality. The BLM manages the visual resource by identifying visual resource values, establishing objectives for managing those values, and taking action to achieve the visual management objectives.

Planning Questions

- Where are the different visual resource values within the planning area, and to what degree should they be protected?
- How will the impacts to the visual resource inventory values (scenic quality, sensitivity, and distance Zones) be assessed individually and quantified?
- Are there any visual values that are of a scarce nature, and how would they be determined and managed for protection?
- How will the impacts of human appreciation, use, and experience of the scenic resource be accounted for within the impact analysis of visual resources?

Preliminary Planning Considerations

- Follow guidance described in BLM Manual 8400, Visual Resource Management
- Follow guidance described in BLM Handbook H-8410-1, Visual Resource Inventory guidelines and Visual Resource Inventory Data Standard Report
- Complete a visual resource inventory for the planning area and then identify visual resource management classes

Management Concern: Social and Economic Sustainability of Local Communities

High economic priorities for the local communities of central Montana are agriculture, ranching as a way of life, recreation, and tourism on public lands. Commercial outfitting, guide businesses, and recreational hunting associated with deer, antelope, and upland game birds are also factors influencing the local economy. Forest health concerns, including emphasis towards fuels management in the wildland/urban/rural interface, continue to increase the importance of extracting timber products from public lands, thus creating jobs within local communities.

Planning Questions

- How will management of BLM lands affect the social and economic conditions of local communities?
- How will management of BLM lands affect the resiliency and sustainability of local communities?

Preliminary Planning Considerations

- Promote social and economic diversification in central Montana
- Recognize the increasing demand for resources on public lands
- Recognize that economies of local communities are dependent on goods and services derived from public lands
- Social-scientific data and methods will be integrated into the entire planning process, from preparing the pre-plan to implementation and monitoring

CHAPTER 2

AREA PROFILE

RESOURCES

2.1 AIR RESOURCES AND CLIMATE CHANGE

The Bureau of Land Management's (BLM's) air resources program includes climate change drivers and air quality. Climate change includes assessment of existing climate, a qualitative description of climate change, and analysis of potential effects of climate change on BLM resources. Air quality includes air quality management, interagency coordination, smoke abatement for prescribed fire, and air quality impact assessment. The BLM is responsible for considering and incorporating climate and air quality into multiple-use programs, for managing the public lands in a manner which will protect air quality, and complying with applicable laws, statutes, regulations, standards or implementation plans.

2.1.1 Indicators

Climate Change Indicators

The most easily measured climate change indicators are atmospheric greenhouse gas (GHG) concentrations and air, soil, and water temperatures. Many other indicators may be used to assess climate change impacts such as those associated with snow and ice, sea levels, plant and animal ranges and behavior, and other ecological changes.

Air Quality Indicators

Air pollutants addressed in this document include criteria air pollutants, hazardous air pollutants (HAPs), and sulfur and nitrogen compounds which could contribute to visibility impairment and atmospheric deposition. State and federal ambient air quality standards set the maximum thresholds for criteria air pollutants and the Montana Department of Environmental Quality (MDEQ) Prevention of Significant Deterioration (PSD) program establishes allowable pollutant concentration increases in Class I areas (such as national parks and large wilderness areas) and Class II areas.

Criteria Air Pollutants

Air quality standards for criteria pollutants have been established by the United States Environmental Protection Agency (EPA) and are identified as the National Ambient Air Quality Standards (NAAQS). Concentrations of air pollutants greater than the primary NAAQS represent a risk to human health, while concentrations above the secondary NAAQS represent a risk to public welfare or the environment. Federal criteria pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀, PM_{2.5}), sulfur dioxide (SO₂) and lead (Pb). Montana criteria pollutant standards include an additional standard for settleable particulate, which is measured by the dust fall method.

Some criteria air pollutants are monitored in the planning area. In Great Falls, ambient concentrations of PM_{2.5} are monitored by the MDEQ, although the monitor is not certified for NAAQS/MAAQs (Montana Ambient Air Quality Standards) comparisons. A new monitoring station funded by the BLM and operated by the MDEQ was installed in Lewistown during July 2012 and measures ambient concentrations of NO₂, ozone, PM_{2.5}, and PM₁₀.

Hazardous Air Pollutants

There are a wide variety of HAPs including benzene, toluene, ethylbenzene, xylene (also referred to as BTEX), n-hexane, and formaldehyde. Although HAPs do not have federal air quality standards, acceptable exposure thresholds do exist. Montana has established an ambient concentration standard

for hydrogen sulfide (H₂S), which is also a federal HAP. Ambient concentrations of HAPs are not monitored on a regular basis within the planning area.

Greenhouse Gases and Black Carbon

Greenhouse gas emissions contribute to climate change. Of GHGs regulated by the EPA, the three most commonly emitted pollutants are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Although it is not considered a GHG because it is a solid-phase pollutant, black carbon (commonly called soot) also contributes to climate change.

Montana and National Ambient Air Quality Standards

Montana Ambient Air Quality Standards (MAAQS) and NAAQS identify maximum limits for criteria air pollutant concentrations at all locations to which the public has access. The MAAQS and NAAQS are legally enforceable standards. Concentrations above the MAAQS and NAAQS represent a risk to human health that, by law, require public safeguards be implemented. State standards for federally regulated criteria pollutants must be at least as protective of human health as federal standards and may be more restrictive as allowed by the Clean Air Act.

Prevention of Significant Deterioration

The PSD program of the Clean Air Act ensures that air quality in areas meeting the NAAQS does not significantly deteriorate, while maintaining an allowable margin for future industrial growth. Under the PSD program, each area in the United States (US) is classified by the air quality in that region according to the following system:

- **PSD Class I Areas:** Areas for which pristine air quality is desirable (such as national parks, large wilderness areas, and Native American Indian reservations) are accorded the strictest protection from air quality degradation. Only very small incremental increases in pollutant concentrations are allowed in order to maintain superior air quality in these areas.
- **PSD Class II Areas:** All areas that are not designated Class I are designated Class II. Moderate incremental increases in pollutant concentration are allowed, although the concentrations are not allowed to reach the concentrations set by Montana and federal standards (MAAQS and NAAQS).
- **PSD Class III Areas:** Originally envisioned for highly industrialized areas, no areas have yet been designated Class III. Concentrations in these areas would be allowed to increase up to the MAAQS and NAAQS.

Visibility

Visibility can be expressed in terms of deciviews, a measure for describing humans' perceived changes in visibility. One deciview is defined as a change in visibility that is just perceptible to an average person, about a 10 percent change in light extinction. To estimate potential visibility impairment, monitored aerosol concentrations are used to estimate visibility conditions for each day monitored. These daily values are then ranked from clearest to haziest and divided into three categories to indicate: 1) the mean visibility for all days (average); 2) the 20 percent of days with the clearest visibility (20 percent clearest); and 3) the 20 percent of days with the worst visibility (20 percent haziest).

The Interagency Monitoring of Protected Visual Environments (IMPROVE) network has measured visibility in national parks and some wilderness areas in the US since the 1980s. Ten IMPROVE stations are located in Montana. Although none of these monitors are located in the planning area, sites at the

UL Bend Wilderness, Gates of the Mountains Wilderness, and the Monture site in Powell County are nearby.

Atmospheric Deposition

Atmospheric deposition refers to processes in which air pollutants are removed from the atmosphere and deposited into terrestrial and aquatic ecosystems. Much of the concern about deposition is due to secondary formation of sulfur and nitrogen compounds from nitrogen oxides (NO_x) and SO₂, which may contribute to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity.

Air pollutants can be deposited by either wet mechanisms (via rain or snow) or dry mechanisms (gravitational settling of particles and adherence of gaseous pollutants to soil, water, and vegetation). The BLM works cooperatively with the EPA to assess dry and wet deposition. One Clean Air Status and Trends Network (CASTNet) station is located at Glacier National Park northwest of the planning area. To measure dry and wet deposition, two National Atmospheric Deposition Program (NADP) stations operate in Glacier National Park (one each in Flathead and Glacier Counties) and one operates in Havre (Hill County).

2.1.2 Current Condition

Climate Condition

The climate in the planning area is primarily a semiarid steppe climate with a continental climate pattern characterized by temperature extremes reaching to 106°F and dropping to -43°F at Great Falls. The planning area extends to the Continental Divide and its northwestern corner and is generally bounded to the west by the Rocky Mountains. High plains and higher elevation forested areas comprise most of the planning area. The plains become more prevalent toward the north, east, and southeast. Summers are generally hot and short, and winters are long and cold. Precipitation is generally low (but increases at higher elevations), with May through August accounting for the greatest precipitation. Wind speeds are variable and generally strong. Table 2-1 provides temperature, precipitation, and wind data for Great Falls and Lewistown.

Table 2-1
Normal Temperature, Precipitation, and Wind Data

Climate Component	Great Falls	Lewistown
Mean temperature ¹	46.9°F	43.1°F
Mean maximum temperature ¹	59.3°F	55.6°F
Mean minimum temperature ¹	34.5°F	30.6°F
Mean annual precipitation ¹	13.98 inches	16.85 inches
Mean annual snowfall	43.6 inches ²	62.8 inches ³
Mean annual snow depth	1 inch ²	1 inch ³
Mean annual wind speed ⁴	11.2 miles per hour	9.3 miles per hour
Prevailing wind direction ⁵	southwest	west

¹ Based on climate normals during the period from 1981-2010 (Western Regional Climate Center [WRCC], 2013a, b).

² Based on a period of record from 1893-2005 (WRCC, 2013c).

³ Based on a period of record from 1896 to March 2013 (WRCC, 2013d).

⁴ Based on 2001-2011 (WRCC, 2014e).

⁵ Based on 1992-2002 (WRCC, 2014f).

Sources: WRCC, 2013a; WRCC, 2013b; WRCC, 2013c; WRCC, 2013d; WRCC, 2013e; and WRCC, 2013f.

“Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or variability of its properties, and persist for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.” (IPCC, 2013). Climate change and climate science are discussed in detail in the climate change Supplementary Information Report (SIR) for Montana, North Dakota, and South Dakota, Bureau of Land Management (BLM, 2010). This document is incorporated by reference into this AMS.

“Warming of the climate system is unequivocal and, since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased.” (IPCC, 2013). Global average temperature has increased approximately 1.4°F since the early 20th century. Warming has occurred on land surfaces, oceans, and other water bodies, and in the troposphere (lowest layer of earth’s atmosphere, up to 4-12 miles above the earth).

As discussed and summarized in the Climate Change SIR, the earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, CO₂, methane, and N₂O absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (BLM, 2010). Current ongoing global climate change is caused, in part, by the atmospheric buildup of GHGs which may persist for decades or even centuries. Each GHG has a global warming potential that accounts for the intensity of each GHG’s heat trapping effect and its longevity in the atmosphere (BLM, 2010). The buildup of GHGs such as CO₂, methane, N₂O, and halocarbons since the start of the industrial revolution has substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth’s surface and re-emit a larger portion of the earth’s heat back to the earth rather than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO₂ and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo).

It is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and lifespans in the atmosphere. For example, CO₂ may last 50 to 200 years in the atmosphere while methane has an average atmospheric lifetime of 12 years (BLM, 2010).

Air Quality Condition

Air quality is good throughout the planning area due to the low population density and relatively strong winds common throughout the region. All locations within the planning area are believed to attain the NAAQS, based on available monitoring data. Cities and towns located in valleys may experience somewhat elevated PM_{2.5} concentrations from winter wood burning, particularly during temperature inversions.

In 2012, two MDEQ ambient air quality monitoring stations were located in the planning area. A monitor in Great Falls monitored PM_{2.5}, but did not provide data that can be compared to the NAAQS. A new Lewistown monitoring station for NO₂, ozone, PM₁₀, and PM_{2.5} became operational in August 2012. Due to the short monitoring period during 2012, monitoring data from this new station cannot be compared to the NAAQS because most NAAQS are averaged over three calendar years. The nearest

monitoring station to the planning area is the Sieben's Flat NCore Station located near Helena in Lewis and Clark County. Data from this site are provided in Table 2-2 along with a summary of the MAAQS and NAAQS. Most pollutants and averaging times are not monitored within the area due to few sources and low emissions throughout the planning area.

Table 2-2
Montana and National Ambient Air Quality Standards

Pollutant	Averaging Time	MAAQS	NAAQS	Standard Type (P = Primary, S = Secondary)	NCore Site ¹
CO	1-hour ²	23 ppm	35 ppm	P	0.607 ppm
	8-hour ²	9 ppm	9 ppm	P	--
NO ₂	1-hour ³	0.30 ppm	100 ppb	P	--
	Annual ⁴	0.05 ppm	53 ppb	P, S	--
Lead	Quarterly ¹⁵	1.5 µg/m ³	1.5 µg/m ³	--	--
	3-month ¹⁵	--	0.15 µg/m ³	P, S	--
Ozone	1-hour ⁵	0.10 ppm	--	P, S	--
	8-hour ⁶	--	0.075 ppm	P, S	--
PM ₁₀	24-hour ⁷	150 µg/m ³	150 µg/m ³	P, S	--
	Annual ⁸	50 µg/m ³	--	P, S	--
PM _{2.5}	24-hour ⁹	--	35 µg/m ³	P, S	10 µg/m ³
	Annual ¹⁰	--	12 µg/m ³	P	4.0 µg/m ³
	Annual ¹⁰	--	15 µg/m ³	S	--
SO ₂	1-hour ^{11, 12}	0.50 ppm	75 ppb	P	--
	3-hour ¹³	--	0.5 ppm	S	--
	24-hour ¹⁴	0.10 ppm	--	P	--
	Annual ⁴	0.02 ppm	--	P	--
Fluoride in Forage	Monthly ¹⁵	50 µg/g	--	--	--
	Grazing Season ¹⁵	35 µg/g	--	--	--
H ₂ S	Hourly ⁵	0.05 ppm	--	--	--
Settleable Particulate	30-Day ¹⁵	10 g/m ²	--	--	--
Visibility	Annual ¹⁶	3×10 ⁻⁵ /m	--	--	--

1. The Sieben's Flat NCore monitor is located near Helena, in Lewis and Clark County west of the planning area. Design values are given for calendar year 2012 or for 2010-2012, depending on the format of the standard (MDEQ, 2013).
2. For NAAQS - no more than one exceedance per calendar year; for MAAQS - no more than one exceedance per consecutive 12 months

3. For NAAQS - 98th percentile, averaged over 3 years; for MAAQS - not to be exceeded more than once over any 12 consecutive months
4. For NAAQS - annual mean not to be exceeded; for MAAQS - arithmetic average over any four consecutive quarters not to be exceeded
5. Not to be exceeded more than once per consecutive 12 months
6. Fourth-highest daily maximum 8-hour ozone concentrations in a year, averaged over 3 years
7. Not to be exceeded more than once per calendar year on average over 3 years
8. 3-year average of the arithmetic means over a calendar year
9. 98th percentile, averaged over 3 years
10. Annual mean, averaged over 3 years, NAAQS promulgated December 14, 2012
11. For NAAQS - 99th percentile of daily maximum 1-hour concentrations in a year, averaged over 3 years
12. For MAAQS - violation when exceeded more than 18 times in any 12 consecutive months
13. No more than one exceedance per calendar year (secondary NAAQS)
14. For MAAQS - no more than one exceedance per 12 consecutive months, 24-hour defined as 24 consecutive hours (rolling average)
15. Not to be exceeded. For NAAQS, this is a 3-year average.
16. Average over any four consecutive quarters

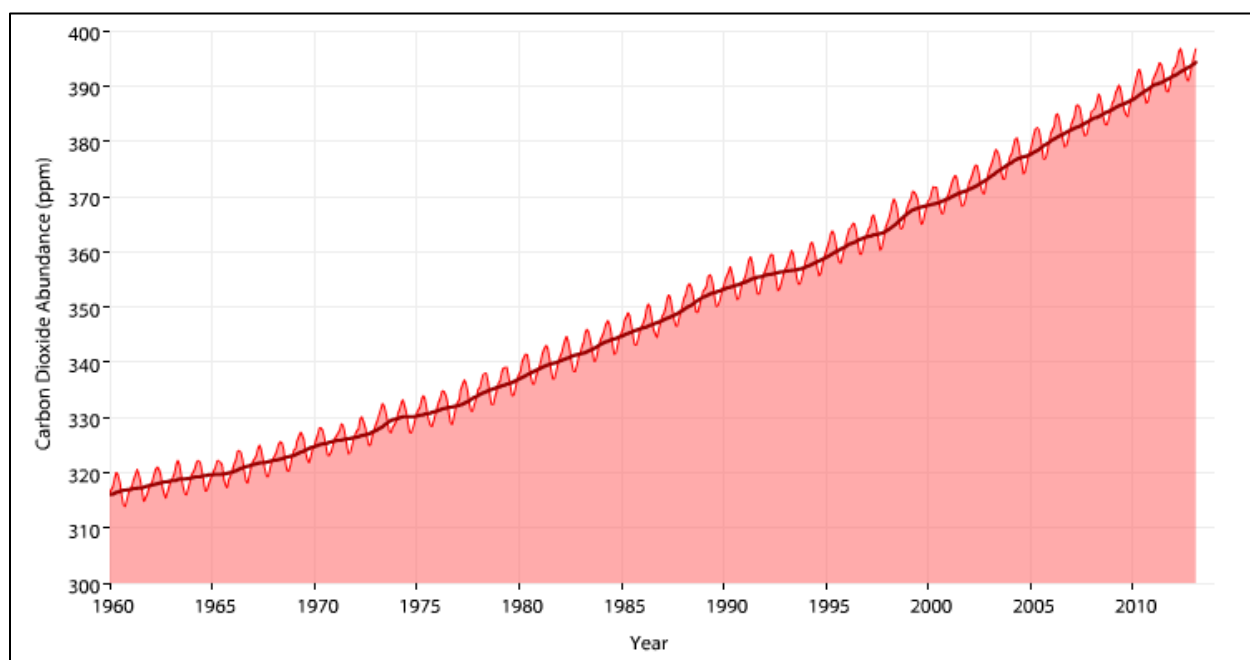
2.1.3 Trends

Climate Change Trends

Greenhouse gas emissions are causing global net warming of the atmosphere, land, and water. Increased atmospheric concentrations of GHGs are increasing and CO₂ concentrations greater than 400 ppm were first monitored on May 9, 2013, (NASA, 2013) at the Mauna Loa Observatory in Hawaii (NASA, 2013). GHG concentrations are not monitored on a regular basis within the planning area.

Figure 2-1 illustrates increasing CO₂ concentrations since 1958.

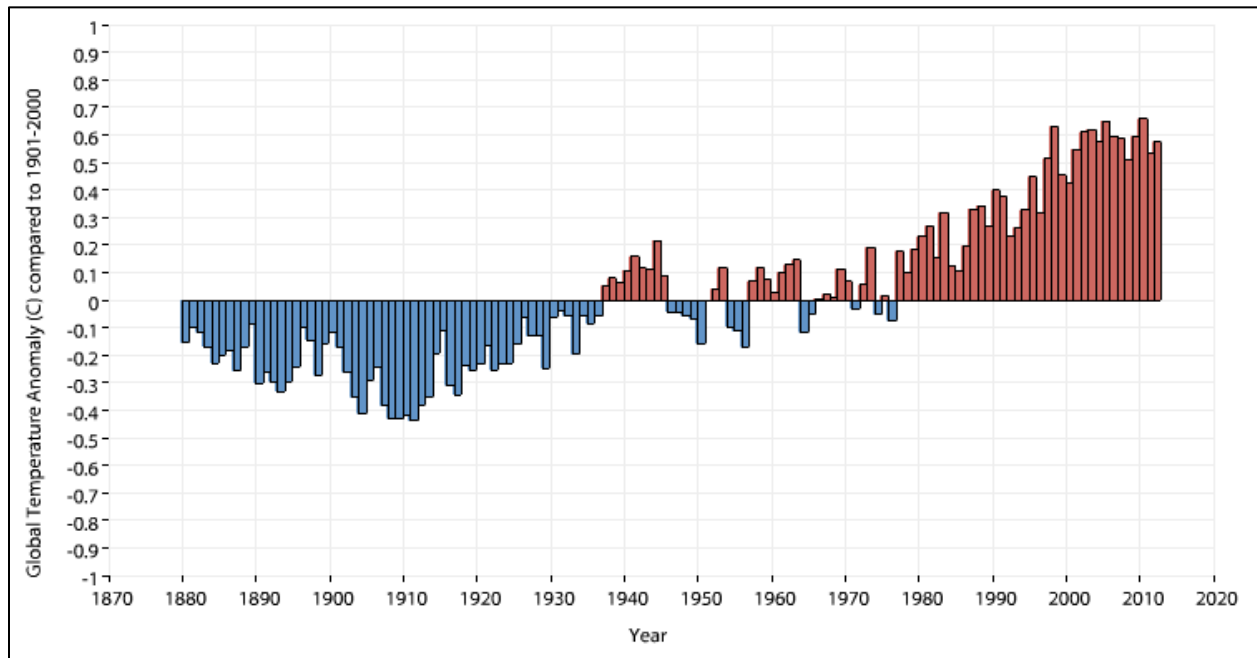
Figure 2-1
Carbon Dioxide Concentration Trends



Source: National Oceanic and Atmospheric Administration (NOAA), 2013a.

The earth's change in global average temperature (including both land and sea) is shown in Figure 2-2. Although year-to-year variability exists, the earth's temperature rose steadily from 1901 through 2000.

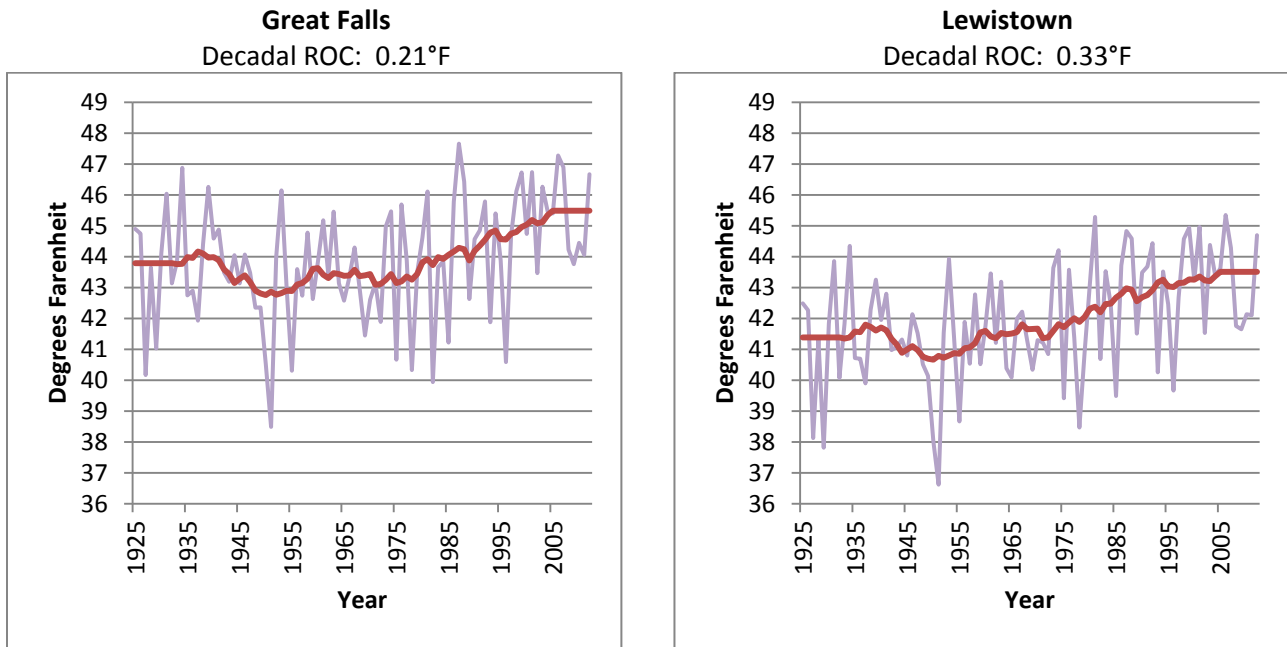
Figure 2-2
Global Temperature Increases



Source: NOAA, 2013b.

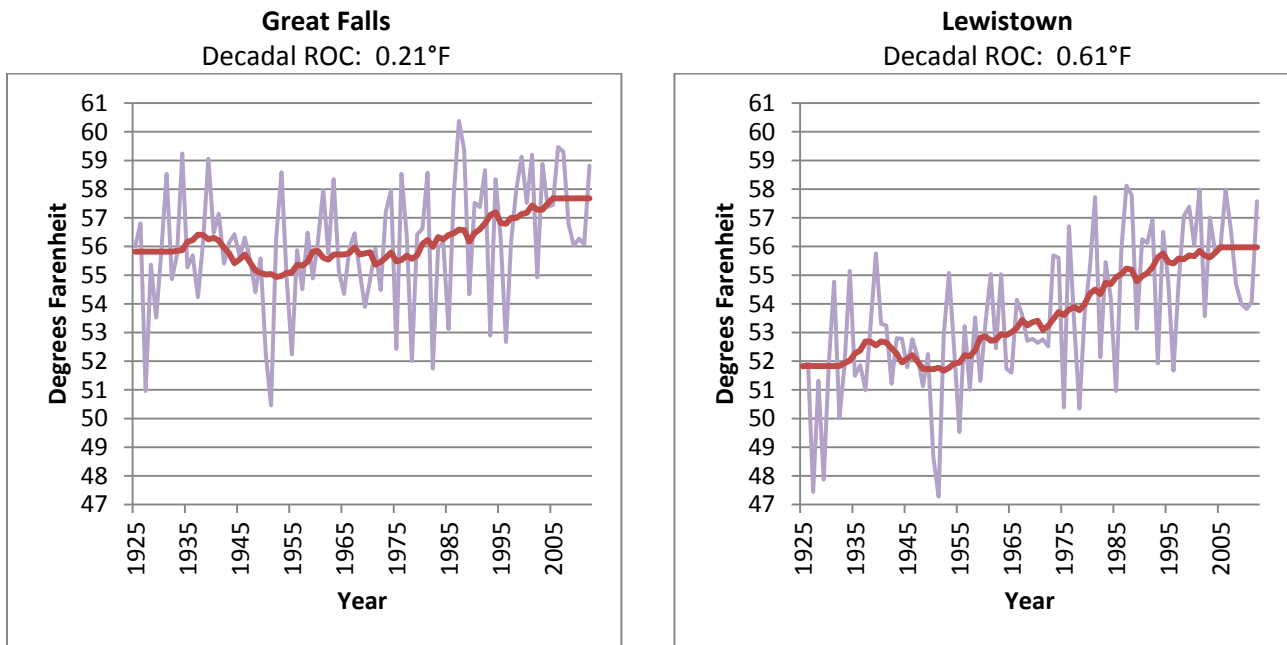
Within the planning area, temperature changes are shown in Figure 2-3 (average annual temperature), Figure 2-4 (average maximum temperature), and Figure 2-5 (average minimum temperature). In each case, annual temperatures are shown in purple, while 15-year smoothing curves are shown in red. Increasing temperatures are evident for both Great Falls and Lewistown when reviewing the annual average temperature and the annual average maximum temperature. However, while the annual average minimum temperature is increasing in Great Falls, it is decreasing in Lewistown. The decadal (10-year) rate of change (ROC) is shown above each graph.

Figure 2-3
Trend in Average Annual Temperature



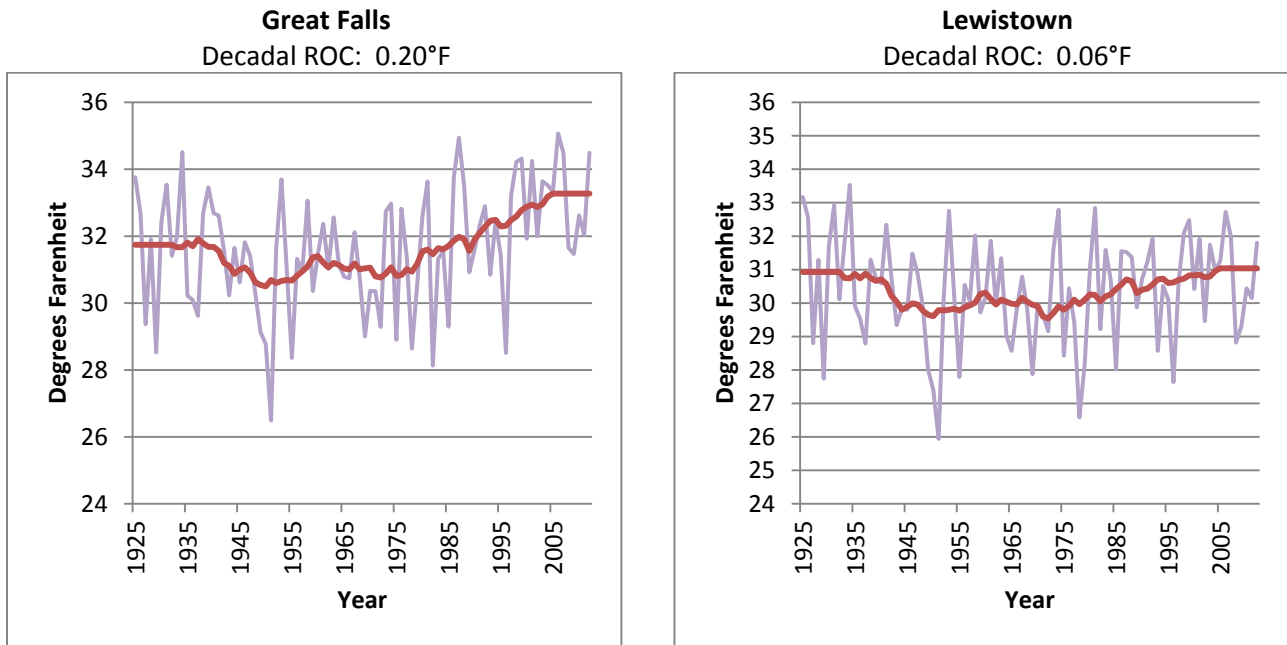
Source: Adapted from Local Climate Analysis Tool (LCAT), 2013.

Figure 2-4
Trend in Average Maximum Temperature



Source: Adapted from LCAT, 2013.

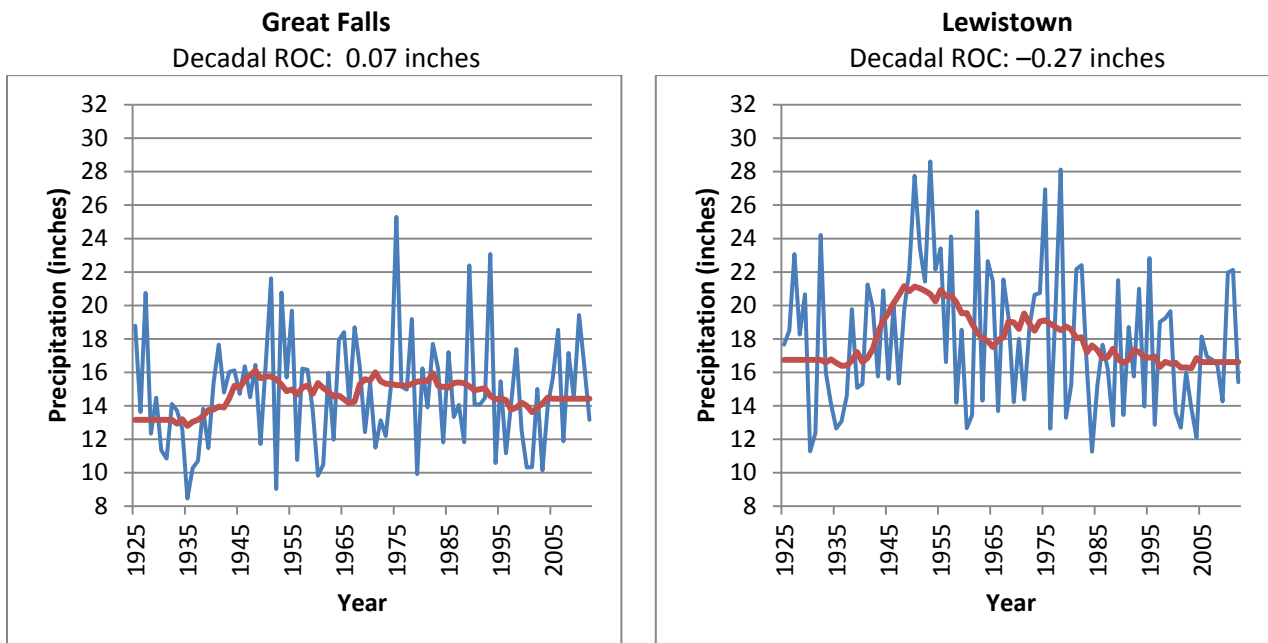
Figure 2-5
Trend in Average Minimum Temperature



Source: Adapted from LCAT, 2013.

Figure 2-6 illustrates recent changes in annual precipitation from 1925 through 2010. While precipitation increased slightly in Great Falls by 0.07 inches per decade, precipitation recently declined in Lewistown by 0.27 inches per decade.

Figure 2-6
Trend in Annual Precipitation



Source: Adapted from LCAT, 2013.

Air Quality Trends

Historical trends for ambient concentrations of criteria air pollutants within the planning area are not available due to the lack of monitoring in the area. Based on data from the Great Falls Monitoring Station, concentrations of PM_{2.5} have decreased slightly over the last several years. The HAP concentrations are not routinely monitored and no trends are available.

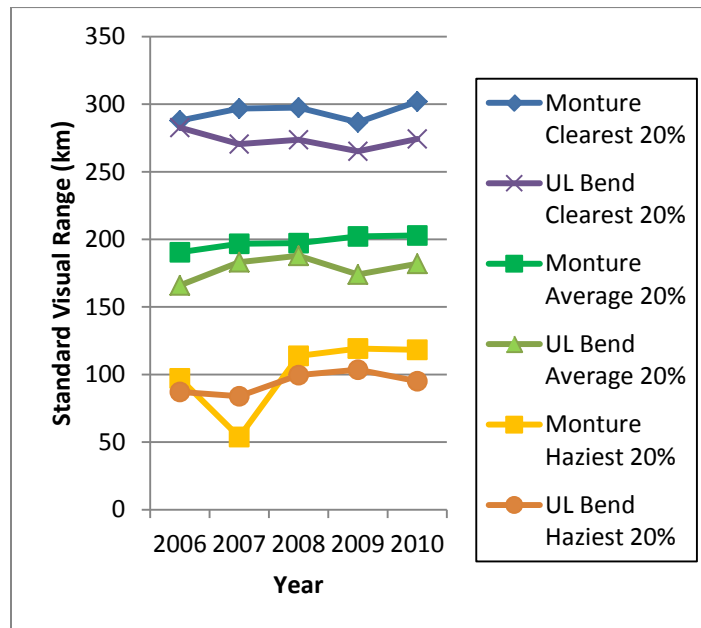
The Clean Air Act requires that Class I areas achieve natural visibility. The Scapegoat and Bob Marshall Wilderness Class I areas are located within the planning area. Several more Class I areas are adjacent to, or within 100 miles of, the planning area. Table 2-3 provides a list of these Class I areas. Visibility at certain non-Class I areas, which are known as sensitive Class II areas is also important. As part of the planning process, NPS, FWS, and FS will identify sensitive Class II areas for the air quality analysis to be performed for the upcoming Lewistown Resource Management Plan (RMP).

Table 2-3
Class I Areas in or near the Planning Area

Areas within or adjacent to the Planning Area	Areas within 100 Miles
Gates of the Mountains Wilderness (FS)	Selway-Bitterroot Wilderness
Glacier National Park (NPS)	Anaconda-Pintler Wilderness
UL Bend Wilderness (FWS)	Flathead Indian Reservation (Tribal)
Bob Marshall Wilderness (FS)	Fort Peck Indian Reservation (Tribal)
Scapegoat Wilderness (FS)	Mission Mountains Wilderness (FS)
	North Absaroka Wilderness (FS)
	Northern Cheyenne Indian Reservation (Tribal)
	Yellowstone National Park (NPS)

Visibility is monitored at sites included in the IMPROVE Network. Visibility trends stated in terms of standard visual range in kilometers are provided for the 20 percent clearest days, 20 percent average days, and 20 percent haziest days. Figure 2-7 shows visibility trends over the last 5 years for the Monture and UL Bend monitors. The Monture site is located west of the planning area and represents visibility in the Bob Marshall, Mission Mountains, and Scapegoat Wildernesses, while the UL Bend monitor is located northeast of the planning area. Visibility is improving slightly at the Monture site. At the UL Bend site, visibility is declining slightly on the clearest days, while improving slightly on average and hazy days.

Figure 2-7
Class I Area Visibility Trends



Deposition is not measured in the planning area, though it is measured in Glacier National Park and in Havre (north of the planning area). At the Glacier National Park Fire Weather Station, acid and nitrate deposition have been relatively stable over the past 5 years, while sulfate deposition has declined slightly. At the Havre Station, acid and sulfate deposition have been stable, while nitrate deposition increased slightly.

2.1.4 Forecast

Climate Change Forecast

Due to the longevity of GHGs in the atmosphere and continued increases in global GHG emissions, atmospheric concentrations of CO₂ and other GHGs are expected to continue increasing for many years, even if global GHG emissions decrease. The GHGs emitted anywhere on earth are transported throughout the atmosphere and resulting climate change impacts can occur anywhere on the globe. Several activities occur within the planning area that will continue to generate GHG emissions. Oil and gas development, large fires, and recreation activities using combustion engines generate CO₂, CH₄, and very small quantities of N₂O.

Some information and projections of regional impacts are becoming available. Chapter 3 of the Climate Change SIR (BLM, 2010) describes impacts of climate change in detail at regional and state scales. The EPA identifies central Montana as part of the Great Plains Region. The following summary characterizes potential changes identified by the EPA (EPA, 2008) that are expected to occur at the regional scale for central Montana:

- The region is expected to experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.

- Earlier snowmelt means that peak stream flow would be earlier, weeks before the peak needs of ranchers, farmers, recreationists, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- More frequent, more severe, and possibly longer-lasting droughts are expected to occur.
- Crop and livestock production patterns could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier conditions would reduce the range and health of ponderosa and lodgepole pine forests, and increase the susceptibility to fire. Grasslands and rangelands could expand into previously forested areas.
- Ecosystems would be stressed and wildlife, such as the mountain lion, black bear, long-nose sucker, marten, and bald eagle, could be further stressed.

Other impacts could include:

- Increased particulate matter in the air as drier, less vegetated soils experience wind erosion.
- Shifts in vegetative communities which could threaten plant and wildlife species.
- Changes in the timing and quantity of snowmelt which could affect both aquatic species and agricultural needs.

Projected and documented broad-scale changes within ecosystems of the US are summarized in the Climate Change SIR (BLM, 2010). Some key aspects include:

- Large-scale shifts have already occurred in the ranges of species and the timing of the seasons and animal migrations. These shifts are likely to continue (USGCRP, 2009). Climate changes include warming temperatures throughout the year and the arrival of spring an average of 10 days to 2 weeks earlier through much of the US compared to 20 years ago. Multiple bird species now migrate north earlier in the year.
- Fires, insect epidemics, disease pathogens, and invasive weed species have increased and these trends are likely to continue. Changes in timing of precipitation and earlier runoff would increase fire risks.
- Insect epidemics and the amount of damage that they may inflict have also been on the rise. The combination of higher temperatures and dry conditions has increased insect populations, such as pine beetles, which have killed trees on millions of acres in western US and Canada. Warmer winters allow beetles to survive the cold season which would normally limit populations while concurrently, drought weakens trees, making them more susceptible to mortality due to insect attack.

More specific to Montana, additional projected changes associated with climate change described in Section 3.0 of the Climate Change SIR (BLM, 2010) include:

- Temperature increases in Montana are predicted to be between 3° to 5°F at the mid-21st century. As the mean temperature rises, more heat waves are predicted to occur.
- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.

- Wind power production potential is predicted to decline in Montana based on modeling focused on the Great Falls area.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures which could also lead to more fishing closures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase in median annual area burned by wildland fires in Montana based on a 1°C global average temperature increase to be 241 to 515 percent.

While long-range regional changes will occur within the planning area, it is impossible to precisely predict the magnitude, location, and timing of local impacts.

Air Quality Forecast

Good air quality is expected to continue within the planning area. Federal and state emission regulations continue to tighten emission limits, thereby reducing emissions from many existing sources. For some pollutants, particularly NO₂, total emissions in the planning area could potentially decrease from current levels if current population and industrial activity remain stable or increase slightly. Compliance with the MAAQS and NAAQS is expected to continue.

The EPA continually reviews NAAQS and sets more stringent ambient standards over time for some pollutants. For example, the EPA has proposed to tighten the current 0.075 ppm ozone standard to 0.060 ppm, 0.065 ppm, or 0.070 ppm. Based on EPA projections, the planning area is expected to meet even the most stringent ozone standard under consideration (EPA, 2011).

2.2 GEOLOGY

2.2.1 Regional Context

The planning area is located within two physiographic provinces: Northern Rocky Mountains and Great Plains. The Northern Rocky Mountain Province consists of the Little Belt Mountains and the Rocky Mountain Front along the southwest and western boundary of the planning area. The Little Belt Mountains are broad, flat-crested anticlines with prominent hogbacks on their flanks. The Rocky Mountain Front is the eastern slope of the Rocky Mountains that abruptly rises 4,000 to 5,000 feet above the plains. This portion of the Rocky Mountains is formed by a north-south trending overthrust fault structure. Both of these mountain ranges are a result of tectonic forces that began in the Late Cretaceous Period and ended in the Paleogene Period (Perry, 1962).

The remainder of the planning area to the east lies within the Great Plains Province. This portion of the province consists of the glaciated and unglaciated sections of the Missouri Plateau that is primarily underlain nearest the surface by the sedimentary formations of the Cretaceous Period.

The Great Plains Province also includes several isolated, island-like mountain ranges that are somewhat younger than the Rocky Mountains. Within the planning area, these island mountains include the Big Snowy, Little Snowy, Highwood, Judith, North Moccasin, and South Moccasin Mountains. The Big and Little Snowy Mountains are a result to horizontal tectonic forces that folded and uplifted the strata into a series of anticlines and synclines across central Montana. Forming igneous structures called laccoliths, the mountains that were created by intrusion of large plumes of plutonic magma through and between layers of older strata are the Judith, North Moccasin, and South Moccasin Mountains. The

Highwood Mountains were formed through a similar clustering of laccoliths, but also has an extrusive igneous component in which layers of volcanic lava built up over a long period of time (Perry, 1962).

2.2.2 Indicators

As a resource, geology is characterized through rock type, structure, deposits or occurrence, and engineering properties. Geology is not managed as a resource in itself, but rather it is used as an indicator in the management of other resources. These other resources include fluid minerals, solid minerals, cave and karst, paleontological, soil, and water resources. Indirectly, geology is also recognized for its scenic contributions to visual resources and special designations. Indicators for these various resources that are moderately reliant on geology are further discussed under their own sections.

2.2.3 Current Condition

Under this section, the location and extent of geology is described and discussed in a manner in which it can be related to the other resources listed in Chapter 2. Current conditions specific to these other resources are further discussed under their own sections.

The area's geology includes extremes in age that range from as recently as 10,000 years ago to nearly 2.5 billion years old. The oldest surface exposures in the planning area are the late Precambrian Belt Series rocks that outcrop in the Little Belt Mountains and along the Rocky Mountain Front.

During the Paleozoic Era, 570 to 240 million years ago, 5,000 to 10,000 feet of Cambrian, Ordovician, Devonian, Mississippian, and Pennsylvanian rock was deposited (see Appendix A). Much of Montana was intermittently covered by shallow seas during this era. Because of numerous episodes of erosion and/or nondeposition, there are unconformities separating many of the rock units, resulting in the lack of Silurian and Permian Period formations (Woodward, 2010). The rocks are dominantly limestone and dolomite, but sandstone and shale also occur. The massive Madison Limestone was deposited during this time. Forming the spectacular cliffs in the mountain ranges of the planning area, this formation can be over a 1,000 feet thick and is resistant to erosion. These outcrops of Madison limestone are charged with surface water in the mountains, making it a major aquifer for groundwater in central Montana (the source for Big Spring, Warm Spring, and Giant Spring). In addition, caves and karst features in Paleozoic limestones occur in most mountain ranges of the planning area.

The Mesozoic Era, from 240 to 66 million years ago, is divided into three periods: Triassic, Jurassic, and Cretaceous formations (see Appendix A). Toward the middle of Jurassic time, a marine sea spread over this portion of the state and deposited 200 to 600 feet of sandy, shaley, and limy sediments. These include the Ellis Group (Sawtooth, Rierdon, and Swift Formations) and the Morrison Formation. Jurassic gypsum and coal have been mined in the planning area.

The Cretaceous Period began with deposition of the Kootenai Formation. It includes sandstone and bright red shale which, on weathering, color the soils. These red soils are conspicuous in central Montana. During late Cretaceous time, the eastern two-thirds of Montana were covered by an inland sea that extended from the Gulf of Mexico to the Arctic Ocean. In three major fluctuations where the inland sea pushed westward, the Colorado, Claggett, and Bearpaw Formations were deposited. As the sea retreated to the east, it deposited the Eagle Sandstone and Judith River Formations (Perry, 1962). Cretaceous Age strata in central Montana have three major divisions: 1) the Colorado Group which developed during the first marine advance and is about 2,000 feet thick; 2) the Montana Group, about 1,500 feet thick, deposited during the multiple marine advances and retreats containing several different formations (see Appendix A); and 3) the Hell Creek Formation, about 700 feet thick, deposited

after the complete retreat of the sea as a series of sediments laid down on a broad coastal plain as outwash from the rising Rocky Mountains (Perry, 1962). Several of these Cretaceous formations are well known for yielding fossils as well as containing aquifers, coal, and bentonite.

The Cenozoic Era extended from 66 million years ago to the present (see Appendix A). The early Paleogene Period was a time of intense igneous and mountain-building activity in central Montana. The region is broken by centers of intrusive and/or extrusive igneous activity. Such areas include the Highwood, Little Belt, Judith, Big and Little Snowy, and the North and South Moccasin Mountains. Along the margins of these uplifts, the upturned stratigraphic section may include units as old as Precambrian up to those deposited just prior to uplift. Paleogene sedimentary rocks include the Fort Union Formation which contains massive sandstone beds. Most of Montana's coal is from the Fort Union formation.

During the Quaternary Period, two major glacial advances occurred. The ice blocked many of the north-flowing rivers, creating large, glacial lakes across central Montana. Except for the area just between the Highwood Mountains and the Missouri River called the Shonkin Sag, most of the glacial sediments were deposited north of the planning area as the ice melted and glacial lakes drained. The Missouri River, which used to flow in the current Milk River Valley and drain into Hudson Bay, was diverted to its present course. From Loma eastward, the Missouri flows in a relatively new valley. Many other pre-glacial streams and rivers either disappeared completely or had their courses radically altered.

In more recent time, erosion has dissected the landscape to its present form. Alluvial material derived from eroding mountains or from reworked glacial deposits, occurs at several levels above current drainages. Large areas of gravels with abundant pebbles and cobbles of limestone blanket the surface for many miles north of Harlowton, Roundup, and west of Lewistown.

2.2.4 Trends

For the planning area, other than large erosion events by mass wasting or surface water, changes in geology take place over periods in time of such length that they cannot be perceived. Rather, the changes in geology are the knowledge and understanding of the resource. Through mineral exploration and mapping activity, water well data, and research activity, the geology trends toward being better understood. This is not measured quantitatively, but trends for these various other resource uses are further discussed under their own sections.

2.2.5 Forecast

Management decisions made by the BLM will likely not affect the large-scale geologic processes occurring in the planning area. However, the management decisions could affect the aesthetic quality of unique geologic features, and both the quality and quantity of mineral deposits available for development. As more easily developable mineral resources are depleted elsewhere, industry may turn to resources such as oil, gas, gypsum, coal, oil shale, or bentonite which generally occur at low grade in the planning area. Likewise, breakthroughs in technology could make these resources in the planning area more economical to develop.

2.2.6 Key Features

Key features that would guide management decisions are better described by the other resources that are reliant on geology described in Chapter 2. The key features specific to these other resources are discussed under their own sections.

2.3 SOIL RESOURCES

Soils in the planning area are diverse; great differences in soil properties can be observed within short distances. Soils are a living system that is linked to nutrient and hydrologic cycles, energy flows, and other ecological processes. The distribution and occurrence of soils is dependent on a number of factors including the interaction of relief (slope and slope length), soil parent material (geology), living organisms, climate, and time. These variables help create complex and diverse soils that influence the use and management of the soil resource. Stable and productive soils provide the foundation for other resources and for resource uses. Stable and quality soils in the planning area provide the foundation for other resources (e.g., vegetation or wildlife) and for resource uses (e.g., livestock grazing or recreation use). Soils are an engineering medium upon which infrastructure such as roads, trails, recreation facilities, etc. are built. Soils are affected by a variety of surface uses that can compact or displace topsoil and damage or remove vegetation or other ground cover, which may result in accelerated erosion and loss of soil productivity.

2.3.1 Indicators

Indicators are key soil characteristics that are sensitive to change in the environment. Indicators of soil resource condition and quality can be categorized into four general groups: visual, physical, chemical, and biological. Visual indicators include exposure of subsoil, change in soil color, ephemeral gullies, ponding, runoff, plant response, weed species, blowing soil, and soil deposition. Visual indicators include evidence of soil erosion and loss by water and wind erosion and deposition, topsoil depth, limitations to root growth, texture, crusting, or transport of soil by mass movement such as slope failure.

Physical indicators are related to the arrangement of solid particles and soil pores. Examples include topsoil depth, bulk density, porosity, aggregate stability, and compaction. Physical indicators primarily reflect limitations to root growth, seedling emergence, infiltration, or movement of water within the soil profile.

Chemical indicators include measurements of pH, salinity, organic matter, cation-exchange capacity, nutrient cycling, and the concentrations of elements that may be potential contaminants or those that are needed for plant growth and development. The soil's chemical condition affects soil-plant relations, water quality, buffering capacities, availability of nutrients and water to plants and other organisms, mobility of contaminants, and some physical conditions, such as the tendency for soil crusts to form. Biological indicators include measurements of micro- and macro-organisms, their activity, or by-products.

2.3.2 Current Condition

Data sources for the planning area soils include soil survey data and regional assessments, rangeland health assessments, field observations, vegetation monitoring, grazing allotment evaluations, and baseline data provided from previous National Environmental Policy Act (NEPA) analyses.

2.3.2.1 Regional Context

Soils have been grouped geographically by land resource regions (LRRs) and major land resource areas (MLRAs) (NRCS, 2006). The planning area lies in LRR-G (Western Great Plains Range and Irrigated Region), LLR-G (Northern Great Plains Spring Wheat Region), and E (Rocky Mountain Range and Forest Region) in MLRAs Northern Rocky Mountains (43A), Central Rocky Mountains (43B), Northern Rocky

Mountain Valleys (44), Northern Rocky Mountain Foothills (46), Brown Glaciated Plains (52), and Northern Rolling Plains Northern Part (58A). Map 1 shows the location of MLRAs within the Lewistown RMP Planning Area.

The Northern Rocky Mountains (43A), Central Rocky Mountains (43B), and Northern Rocky Mountain Foothills (46) MLRAs are characterized by rugged, glaciated mountains, thrust- and block-faulted mountains, deep canyons, hills, plateaus, and valleys. The bedrock formations range from Precambrian to Cretaceous in age. Rocks consist of shale, siltstone, sandstone, limestone, dolomite, argillite, quartzite, gneiss, schist, and granite. These areas receive more precipitation than the other MLRAs (15 to over 20 inches annually); therefore, vegetative cover is higher. Soils are shallow to very deep, very poorly drained to well drained, and have most of the soil texture classes. The dominant soil orders for Northern Rocky Mountains (43A) are Andisols, Inceptisols, and Alfisols, and the dominant orders for Central Rocky Mountains (43B) are Inceptisols, Alfisols, and Mollisols. The soils in the area dominantly have a frigid or cryic soil temperature regime, and have a locally moist to mostly dry soil moisture regime. Soils on mountain side slopes and ridges, formed in colluvium, residuum, and glacial till, have mixed mineralogy. Most of the soils are skeletal and are medium to coarse textured. Areas of rock outcrop and rubble land occur on ridges and peaks above timberline. Erosion hazards in these MLRAs are slight to severe depending on topography and slope lengths. Shallow soils in these MLRAs are difficult to reclaim after surface-disturbing activities. In MLRAs Northern Rocky Mountains (43A) and Central Rocky Mountains (43B), land uses are dominated by forestry followed by lesser amounts of livestock production on grasslands and croplands. In Northern Rocky Mountain Foothills (46), livestock production is the principle land use followed by mostly nonirrigated croplands and forestry.

The Northern Rocky Mountain Valleys (44), is characterized by deeply dissected mountain valleys, bordered by north- to south-trending mountains. In the valleys, nearly level, broad floodplains are bordered by terraces and alluvial fans and often show signs of modification by glaciation or lake deposits. Precipitation averages 9 to 16 inches annually and is generally semiarid. Soils are generally very deep and well drained, and soil textures range from loamy to loamy skeletal. The dominant soil orders for Northern Rocky Mountain Valleys (44) are Inceptisols, Mollisols, and Andisols, and temperature regimes range from frigid at lower elevations to cryic at higher elevations. Soils have formed in mixtures of alluvium, colluvium, and eolian deposits on alluvial fans, stream terraces, plains, or hills. Other soils have formed in residuum or in glacial deposits on stream terraces, terrace escarpments, and glacial till plains. Generally, soils have seasonally moist (ustic) to seasonally dryer (xeric) soil moisture regimes. Because much of this area is characterized by short slope lengths and fairly level terrain, erosion hazards are slight to moderate, and reclamation or restoration potential of these soils is generally favorable. Land uses are dominated by livestock production on rangelands, followed by croplands, forest harvest, and urban development.

The Brown Glaciated Plain (52) is generally covered by glacial till plains. Glacial till ranges from a few feet to about 200 feet thick and is generally underlain by shale. Landscapes range from nearly level to gently or strongly rolling with steep areas along drainage-ways. Upland potholes, valley bottoms, terraces, and alluvial fans are commonly found in this MLRA. Alluvial deposits are extensive along the Milk River but occur in narrow and discontinuous strips along other smaller streams and rivers. Soils are dominantly well developed, moderately deep to very deep (from 20 to more than 60 inches) and well drained. Surface textures generally vary from loamy to clayey. The dominant soil orders in this MLRA are Alfisols, Entisols, and Mollisols. Precipitation ranges from 10 to 17 inches annually and the climate is dominantly semiarid. Soils have formed in till plains and hills, and in alluvium on alluvial fans, stream terraces, and hills. The soils in the area dominantly have a frigid soil temperature regime, a seasonally moist (ustic) soil moisture regime, and mixed or clay smectitic mineralogy. Erosion hazards are slight to

moderate due to the relatively gentle rolling topography and short slope lengths. Reclamation or restoration potential is generally high for this MLRA. Principle land uses include mostly nonirrigated croplands with some livestock production on rangelands.

The Northern Rolling High Plains, Northern Part (58), consists of eroded plateaus and terraces, with a few isolated plateau mountains approaching 7,000 feet elevation. Slopes generally are gently rolling to steep with areas of steeply sloping breaks and badlands bordering the larger streams and rivers such as the Missouri River. Marine and continental sediments of the Cretaceous Montana Group underlie this MLRA. The Montana Group includes the Bearpaw shale; Judith River sandstone, siltstone, and shale; Claggett shale; Eagle sandstone; and Telegraph Creek sandy shale. Inclusions of acidic shale are found within this MLRA that, in places, because of acidic conditions, have created sandy-textured soil that support diverse plant populations including lower elevation pine forests (Heinze, 1987). Precipitation ranges from 8 to 22 inches, and is dominantly semiarid. Soils are mostly fine textured, and shallow to moderately deep (from 10 to over 40 inches). Overall, soils are loamy and sandy where high sandstone ridges occur. The dominant soil orders in this MLRA are Entisols and Inceptisols. The soils in the area dominantly have a frigid soil temperature regime, a seasonally moist soil moisture regime, and mixed or clay mineralogy. Soils are generally well drained, and have formed in residuum or alluvial, eolian- or glacio-fluvial deposits on hills, fans, terraces, ridges, and floodplains. In certain areas such as the Missouri and Musselshell River Breaks, these soils can have severe erosion hazards and have poor restoration or reclamation suitability because of the occurrence of steep and very steep slopes (greater than 20 percent slope) and extreme physical properties such as high clay content, slow permeability, and shallow depth, and sparse vegetative ground cover. Soils are generally low in organic matter and high in sodium and soluble salts. Dominant land uses in this MLRA are livestock production and mostly nonirrigated croplands. Mining and oil occur on relatively small areas but are an important land use in some areas.

2.3.2.2 Soils in the Planning Area

General soils information for the planning area was obtained from the STATSGO2 US General Soils Map (US Department of Agriculture [USDA]-NRCS, 2013, Table 2-4), which is designed primarily for regional, multi-state, river basin, state, and multi-county resource planning, management, and monitoring. This dataset was created by generalizing more detailed soil survey maps. The database is intended to give a general overview of soils distribution and occurrence in the planning area and is not suitable for site-specific evaluations. Appendix B provides a comprehensive list of soil map units within the planning area.

Table 2-4
Major Land Resource Areas in the Planning Area

Number	MLRA	Area (Acres)
45	Northern Rocky Mountain Valleys	200,006
47	Northern Rocky Mountain Foothills	5,442,514
43A	Northern Rocky Mountains	986
43B	Central Rocky Mountains	3,369,328
53	Brown Glaciated Plain	1,992,629
58A	Northern Rolling High Plains, Northern Part	2,301,342

Detailed soils information is available from the Soil Survey Geographic (SSURGO) database for the individual soil surveys within the planning area. These soil surveys were performed by the Natural

Resources Conservation Service (NRCS) according to National Cooperative Soil Survey (NCSS) standards, policies, and procedures, and were conducted at the second and third order of detail. They have been developed for all counties in the planning area except for Teton and Pondera Counties. This detailed soils information is used to determine soils suitability and/or limitations for any applied management action. For site-specific analysis, onsite soil investigations should provide detailed soils information on suitability and limitations of soils for specific proposed actions. Evaluations should consider slope and soil properties such as texture, organic matter content, structure, permeability, depth, available water capacity, and salt concentrations.

The major soil resource concerns in this region are inherent wind erosion potential and water erosion potential that could occur where soil ground cover has been altered (USDA Agriculture Handbook 296, NRCS, 2006). Erosion hazard is the susceptibility of soil to erosion. Soil erosion is the detachment and movement of soil particles by the erosive forces of wind or water. Impacts to the soil resource from erosion include changing the capacity of the soil to function and restricting productivity and its ability to sustain future uses. Soil landscape position, steepness of slope, physical properties (including texture and structure), and chemical properties contribute to susceptibility to wind and water erosion. Soils in the planning area with a high wind or water erosion hazard have been identified where county soil survey data were available. On public surface within the planning area, approximately 52 acres of soils are severely susceptible to wind erosion and 88,555 acres are severely susceptible to water erosion. The areas highly susceptible to wind or water erosion in the planning area are summarized by ownership in Table 2-5.

Table 2-5
Water and Wind Erosion Hazard Ratings for the Lewistown Planning Area in Acres

Erosion Type		BLM-administered Surface		Federal Mineral Estate		All Land Ownership	
		Acres	Percent of BLM-administered Surface	Acres	Percent of Federal Mineral Estate	Acres	Percent of Lands within Planning Area
Wind	Slight	252,929	38.7%	785,610	49.4%	8,345,578	67.6%
	Moderate	384,533	58.8%	758,379	47.7%	3,210,734	26.0%
	Severe	52	0.0%	509	0.0%	28,450	0.2%
	Not Rated	16,860	2.6%	44,611	2.8%	754,553	6.1%
Water	Slight	333,320	50.9%	814,584	51.0%	7,160,172	58.0%
	Moderate	197,406	30.2%	448,002	28.0%	2,175,683	17.6%
	Severe	88,555	13.5%	221,961	13.9%	1,094,791	8.9%
	Not Rated	35,123	5.4%	112,942	7.1%	1,908,672	15.5%

Source: NRCS SSURGO2, 2014.

Caveat: No FWS, FS, BIA, and water were included in any calculations for federal mineral estate.

Water erosion potential is a function of many factors including: soil erodibility; slope gradient; length of slope; rainfall amount, duration, and intensity; and vegetation cover. The soil erodibility factor (Kw) quantifies soil detachment by runoff and raindrop impact. This erodibility factor is an index used to predict the long-term average soil loss from sheet and rill erosion. The Kw factor applies to the whole soil, which includes rock fragments, and is based primarily on the percentage of silt, sand, and organic matter; soil structure; saturated hydraulic conductivity; and rock fragments. Values of Kw range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet erosion by water. Water erosion potential is generally highest in steeper areas with high erodibility and

exposed soil such as the Missouri and Musselshell River Breaks, or other relatively steep areas, especially near or along drainages or slope breaks.

Wind erosion is a critical issue following the removal of protective vegetation which results in the displacement or loss of topsoil in some areas, increased sediment deposition in other areas, and impacts to ambient air quality from elevated dust levels. The wind erosion index (WEI) is a numerical value indicating the susceptibility of soil to wind erosion, or the tons/acre/year that can be expected to be lost to wind erosion. This index is divided into three rating classes: slight, moderate, and severe. A close correlation exists between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, and organic matter. Soil moisture and frozen soil layers also influence wind erosion. Wind erosion potential is highest in Fergus and Petroleum Counties.

Primarily impacts occur to soil resources through the development or use of other resources. Soils in the planning area are impacted by a variety of surface uses or impacts such as livestock grazing on livestock allotments, the development of mineral resources, farming, off-highway vehicle (OHV) use, development of recreation facilities such as trails or campgrounds, timber harvesting, development of rights-of-way (ROW), wildfire suppression activities, and the use of prescribed fire to reduce fire risk. As a result, localized impacts on soil resources may occur such as loss of vegetative ground cover, gullies and headcuts or sheet erosion, mass wasting, and loss of soil productivity and fertility. Much of the planning area is open to grazing, and areas of high-density grazing such as around water developments are subject to soil compaction. Livestock grazing can result in a loss of vegetative cover leading to increased soil erosion. Livestock can congregate around water sources, increasing soil compaction and soil disturbance. Fence building or installation of livestock watering facilities can also cause soil disturbance. Off-highway vehicle use has the potential to damage vegetative cover resulting in soil rutting, concentration of runoff, and increased soil erosion. Building roads, campgrounds, or recreational facilities can result in long-term soil disturbance. Timber harvesting can impact soil resources from the construction of roads and trails, as well as removal of vegetative cover which protects the soil surface from erosion. Activities associated with timber harvesting can cause soil compaction, concentration of surface runoff, and exposure of the soil surface. Right-of-way development can include a number of surface-disturbing activities such as road building or trenching and clearing of construction sites. Prescribed fire and wildfire results in the temporary removal of vegetative cover and can result in increases in soil erosion. The use of vehicles and heavy equipment to suppress wildfires can create surface disturbance, concentration of surface runoff, and increased soil erosion. All of these activities have the potential to create both short- and long-term impacts to soils.

Invasive plant infestations in the planning area exist and are expected to increase. Infestations can alter soil health, although this depends on other factors such as soil disturbance and climatic conditions. Invasive plant infestations can force out native vegetation and replace it with weedy plants that provide inferior protection to the soil surface. Invasive plant species typically do not have root systems adequate to stabilize soils, and sites dominated with invasive plants are often subject to accelerated erosion.

Because semiarid moisture regimes exist in much of the planning area, once topsoil is lost it can be irretrievable or slow to rebuild. The BLM has developed and adopted practices for soil conservation. For example, erosion and runoff control best management practices (BMPs) such as those outlined for soils in the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (1997) and *Montana State Best Management Practices* proposed in the *Butte Proposed RMP/Final Environmental Impact Statement (EIS)*, Appendix A (BLM, 2013) are typically applied during and after soil disturbance resulting from surface uses to reduce the

impact of surface uses on soils. These preventative practices are designed to reduce the impacts of management activities on soils and are measures that have been developed by agency, industry, scientific, and/or working groups as voluntary methods for reducing environmental impacts associated with certain classes of activity. The BLM typically uses these measures as guidelines or “project design features” during implementation planning at the activity- and/or project-specific levels.

Reclamation is the reconstruction of topographic, soil, and plant conditions after disturbance has occurred which permits the degraded land mass to ecologically function (Munshower, 1994) and maintain soil productivity. Disturbed areas should be returned to some type of stable ecosystem (not actively eroding) as rapidly as possible (Munshower, 1994). Reclamation is not the restoration of a site; instead, the long-term objective of reclamation is to set the course for eventual ecosystem restoration.

Reclamation suitability criteria are based upon soil resilience which is the inherent ability of the soil to recover from degradation. The ability to recover from degradation means the ability to restore functional and structural integrity after a disturbance. Soil functions that are important include sustaining biological activity, diversity, and productivity; the capture, storage, and release of water; storing and cycling nutrients and other elements; filtering, buffering, degrading, immobilizing, and detoxifying contaminants; and providing support for plant and animal life. Factors that affect reclamation suitability include relative risk of water and wind erosion, salinization, organic matter and nutrient depletion, precipitation, excess steepness or coarse fragments that limit common rehabilitation practices, topsoil loss, or the loss of adequate rooting depth required to maintain desired plant communities. Table 2-6 shows the approximate surface and subsurface acreage amounts associated with each reclamation suitability class overall in Montana.

Table 2-6
Reclamation Suitability on BLM Lands in Montana

BLM Reclamation Suitability in Montana (Acres)		
Reclamation Suitability Rating Class	BLM Land	Federal Mineral Estate
Well Suited	444,658	875,197
Moderately Suited	457,610	853,079
Poorly Suited	1,533,484	2,422,506

Source: GIS-calculated acres using NASIS datasets in an access database template, NRCS (Montana State Office - Bozeman) in August 2007 as cited in BLM *HiLine DRMP*.

Successful reclamation efforts are critical in maintaining an effective multiple-use land management program. Areas of low reclamation potential should be identified using the best available data and onsite evaluations. Authorized surface-disturbing activities should be subject to an evaluation to develop mitigation (if necessary) and apply BMPs (Appendix A) and a plan for reclamation. Authorization denial would occur on areas where erosion cannot be effectively controlled and mitigated and reclamation to BLM standards is likely to be unsuccessful.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and that is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land but not urban or built-up land or water areas). Approximately 615 acres of potential prime farmland soil mapping units are on BLM lands and approximately 2,320 acres are on federal mineral estate.

Most of the prime farmland occurs along stream and river valleys and terraces as well as on gently sloping, upland areas. To meet the criteria of a prime farmland unit, most soils on BLM lands would require additional moisture, such as dependable irrigation water, which is lacking on BLM lands.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. The land has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high-quality crops and/or high yields of a specific crop when the lands are treated and managed according to acceptable farming methods. The Farmland Protection Policy Act (FPPA) states that federal programs which contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses will be minimized and shall be administered in a manner that, as practicable, are compatible with state and local government and private programs and policies to protect farmland. Approximately 615 acres of potential prime farmland soil mapping units are on BLM lands and approximately 2,320 acres are on federal mineral estate.

2.3.3 Trends

Monitoring indicates that most livestock allotments and other impacts from other activities are reducing soil loss and maintaining soil productivity, so soil resource trends are stable or improving. In general, reclamation techniques have proven successful, allowing surface-disturbing activities to continue. However, there are areas where soil quality, productivity, and stability are locally diminishing due to concentrated commercial and/or recreational activities.

2.3.4 Forecast

Future localized impacts on soil resources may occur as a result of livestock grazing on livestock allotments, the development of mineral resources, farming, OHV use, and development of recreation facilities such as trails or campgrounds, timber harvesting, development of rights-of-way (ROWS), wildfire suppression activities, and the use of prescribed fire to reduce fire risk. All of these activities have the potential to create both short- and long-term impacts to soils.

Continued use of BMPs and adherence to the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (1997) will increase vegetative ground cover and reduce soil damage and loss from headcuts and gullies, sheet erosion, and mass wasting, and, as a result, reducing sedimentation to streams and rivers and maintaining or improving soil condition and fertility.

The cumulative amount of surface disturbance or vegetative manipulation that can be supported by soils in the planning area has not been determined. A threshold value for soil disturbance in any given watershed in semi-arid regions such as most of the Lewistown RMP planning area has not been accurately determined. However, it is widely recognized that there is a limit to the amount of disturbance which can occur in any watershed without producing significant impacts to soil conditions. Continued soil monitoring is needed to quantify and evaluate direct and cumulative impacts to soil resources so that the level of acceptable soil disturbance can be accurately determined.

Ongoing or increased mineral development and the continued dependence on other natural resources will place an increased demand on public lands and the soil resource. Extraction of minerals generally involves surface-disturbing activities and, as a result, impacts to soil resources can be long term. Disturbance is also associated with activities such as pipeline installation, powerline construction, seismic exploration, or exploratory drilling.

Climate change will play a role in future soil conditions. The effects of climate change on the soil resource may be subtle and could be difficult to detect until a change threshold has been crossed and effects are determined. In addition, climate change effects on the soil resource may be synergistic. Land uses, particularly those with surface disturbance, when combined with warmer temperatures and alterations in the hydrologic cycle, and the resulting shifts in vegetative communities could result in an amplification of impacts to the soil resource.

2.3.5 Key Features

Key features for soil resources include sensitive soils that have severe wind and water erosion potentials and low reclamation potential. Other unique soil features such as prime farmland occur in the planning area.

2.4 WATER RESOURCES

2.4.1 Groundwater Resources

This section characterizes groundwater quantity and quality and describes groundwater use and current management practices in the planning area. Although groundwater is readily available and widely used in nearly every part of Montana, it currently represents only about 2 percent of the state's total water withdrawals (*Montana Ground-water Atlas*, Montana Bureau of Mines and Geology [MBMG]). The demands for high quality water will more than likely increase as the state's population and industries continue to grow.

Montana can be divided into three groundwater regions based upon landform and geology (Heath, 1987), and the planning area contains portions of all three groundwater regions. The three groundwater regions are the Western Mountain Ranges Region, the Glaciated Central Region, and the Nonglaciated Central Region. The regions are helpful in understanding the kinds of sedimentary deposits and rocks that are available as potential aquifers in a given area.

The Western Mountain Ranges Region covers the western third of Montana and, as the name implies, it is dominated by mountains. In general, the valley bottoms between the mountains are filled with thick deposits of unconsolidated sediments deposited by streams (alluvium). These are highly productive aquifers and are a widely used source of water in the region.

The Glaciated Central Region lies across an area of northern Montana from roughly the Rocky Mountain Front to the North Dakota Border. Most of the region is underlain by flat-lying sedimentary rocks and has experienced several episodes of glaciation, which has left behind deposits of till and outwash sediments. These can be a source of groundwater in some places. Streams that have cut down through the sedimentary rocks have developed alluvium associated with modern day stream channels, and these areas are productive sources of water. The sedimentary rocks underlying the region can be important aquifers in some areas (Heath, 1987)

A good portion of the planning area falls within the Nonglaciated Central Region. While there are isolated mountain ranges in the western portion of the region, most of the region is flat laying sedimentary rocks. This region was not covered by continental glaciation. Alluvial aquifers are the most productive sources of groundwater in this region, and they are typically found in alluvial deposits along major streams.

For land use planning purposes, the planning area's aquifers are described by surficial and bedrock aquifers. Surficial aquifers are located at, or near, the land surface and are mostly composed of unconsolidated sediments deposited by streams, glaciers, or by meltwater from glaciers. Bedrock aquifers are located within consolidated geologic formations. Generally, they are siltstone, sandstone, and limestone formations, and they can be found from hundreds to thousands of feet below the land surface.

From a regional context, it is important to realize the role that the mountains and isolated mountain ranges in central Montana play in groundwater recharge and the availability of groundwater in central and eastern Montana. Many of the flat-laying sedimentary rocks in central and eastern Montana are uplifted and exposed on the flanks of the Rocky Mountain Front and the island mountain ranges. A portion of the precipitation that the mountains receive seeps into the bedrock and flows away from the mountains. Thus, some of the groundwater in central and eastern Montana comes from the mountainous areas to the west.

2.4.1.1 Indicators

Similar to surface water, natural processes and human actions influence the chemical, physical, and biological characteristics of groundwater. Groundwater quality is related to the chemical composition of the rocks composing the geologic units through which the water travels. Water temperature, the duration of contact with the rocks, and the rate of movement of the water also will affect the chemical quality of groundwater. Indicators of groundwater quality include, but are not limited to:

- Chemical characteristics (e.g., pH, conductivity, dissolved oxygen, hardness, nitrates)
- Physical characteristics (e.g., temperature, taste, color)
- Biological characteristics (e.g., fecal coliform)

Similar to surface water, the state's groundwater has beneficial use classes that have different numeric and narrative criteria for meeting water quality standards. Under Montana water quality law, water quality must be maintained to sustain the use class of the groundwater. There are four classes of groundwater based upon the specific conductance of the water. Specific conductance is an indicator of the level of dissolved solids in the water. The classes are I, II, III, and IV, with Class I being the highest quality water and Class IV being the lowest quality water. In short, Class I waters could be used for public or private water supplies. Class II waters are marginally suitable for water supplies but could be used for agricultural and stock supply. Class III and IV waters have more limited beneficial uses, but could be appropriate for some industrial type uses.

Montana has the authority to control or close groundwater aquifers to certain types of appropriations because of water availability problems, water contamination problems, and a concern for protecting existing water rights. The State of Montana may designate or modify controlled groundwater areas, which is often done when health risks are identified. Controlled groundwater areas are an indicator of groundwater contamination concerns or groundwater availability issues.

The actual flow rate and volume of groundwater removed from an aquifer at any given well or spring is highly variable. However, the numbers of groundwater well/spring points of diversion and groundwater well densities are indicators of the level of groundwater use in a particular area. Depending on site-specific conditions, it could indicate that there is a widely available groundwater source, but it could also indicate a high level of difficulty in obtaining new groundwater appropriations in a heavily used area.

2.4.1.2 Current Condition

Much of the following discussion regarding the existing condition of groundwater resources is taken from the *Montana Ground-water Atlas*, which was compiled by MBMG.

For the intent of this discussion, the planning area's groundwater aquifers have been divided into surficial and bedrock aquifers. Refer to Map 2 and Map 3 for the location of surficial and bedrock aquifers in the planning area. Surficial aquifers are located at, or near, the land surface and they are mostly composed of unconsolidated sediments deposited by streams, glaciers, or by meltwater from glaciers. Bedrock aquifers are located within consolidated geologic formations. Generally, they are siltstone, sandstone, and limestone formations, and they can be found from hundreds to thousands of feet below the land surface.

According to the *Montana Ground-water Atlas*, surficial aquifers are the most widely used aquifer systems in Montana. Alluvial aquifers are most often used because they lay near the land surface and are accessible via shallow wells. Water yield and water quality is routinely quite good. Alluvial aquifers are vulnerable to human-caused contamination in a variety of settings.

Table 2-7
Surficial Aquifer Quantity and Quality

Common Drilling Depth	Geologic Materials	Aquifer Type	Production or Yield	Total Dissolved Solids
20 to 40 feet (ft); may exceed 250 ft	Unconsolidated clay, silt, sand, and gravel	Commonly unconfined, can be partially confined to completely confined in some areas	Typically 5 to 50 gallons per minute (gpm); may exceed 1,500 gpm	Range 300 to 2,200 milligrams/liter (mg/L)

Source: *Montana Ground-water Atlas*.

Bedrock aquifers are a very important water supply in the planning area. Generally, water quality is best near the recharge zones, and the concentration of total dissolved solids increases with distance from the recharge zone. Groundwater that is near the recharge zone has not had time to dissolve soluble salts and minerals. Recharge zones are typically found in outcrop areas near the edge of the mountains.

Table 2-8
Bedrock Aquifer Quantity and Quality

Aquifers in Cenozoic Rocks				
Aquifer	Common Drilling Depth	Geologic Materials	Aquifer Type Production or Yield	Total Dissolved Solids
Fort Union Formation	50 to 300 ft; may exceed 1,000 ft	Interbedded shale, siltstone, sandstone, and coal	Commonly confined; 15 to 25 gpm; may exceed 100 gpm except near the surface	Range 500 to 5,000 mg/L
Aquifers in Mesozoic Rocks				
Aquifer	Common Drilling Depth	Geologic Materials	Aquifer Type Production or Yield	Total Dissolved Solids
Hell Creek – Fox Hills Formations	150 to 500 ft; may exceed 1,000 ft	Mainly sandstone with some siltstone and shale	Confined; 5 to 20 gpm; may exceed 200 gpm	Range 500 to 1,800 mg/L; commonly less than 1,800 mg/L
Judith River Formation	200 to 600 ft; may exceed 1,000 ft	Sandstone, siltstone, with some coal	Confined; 5 to 15 gpm; may exceed 100 gpm	Range 160 to 27,000 mg/L
Eagle-Virgelle Formation	100 to 800 ft; may exceed 2,000 ft	Interbedded sandstone and shale	Confined; 10 to 20 gpm; may exceed 200 gpm	Range 800 to 1,500 mg/L
Kootenai Formation	100 to 1,000 ft; may exceed 3,000 ft	Interbedded sandstone, siltstone, and shale	Confined; 10 to 30 gpm; may exceed 100 gpm	Range 200 to 500 mg/L; may exceed 14,000 mg/L
Ellis Group	300 to 2,000 ft; may exceed 5,000 ft	Sandstone, shale, limestone, and dolomite	Confined; no data	Generally less than 600 mg/L
Aquifers in Paleozoic Rocks				
Aquifer	Common Drilling Depth	Geologic Materials	Aquifer Type Production or Yield	Total Dissolved Solids
Madison Group	500 to 3,000 ft; may exceed 7,000 ft	Limestone, dolomite, anhydrite, and halite	Confined; 20 to 6,000 gpm; higher in karst areas	Range 500 to 300,000 mg/L

Source: *Montana Ground-water Atlas*.

No controlled groundwater areas are located within the planning area. This would indicate that there are no widespread groundwater areas of concern regarding contamination or water quantity availability. However, localized instances of groundwater contamination and groundwater availability issues do occur. Surficial aquifers are particularly vulnerable to contamination because they are located close to the land surface, and they are generally composed of unconsolidated, permeable materials. Fertilized

agriculture is a common source of nitrate-nitrogen pollution in shallow groundwater in the planning area.

The actual flow rate and volume of groundwater removed from an aquifer at any given well or spring is highly variable. However, the numbers of groundwater well/spring points of diversion and groundwater well densities are indicators of the level of groundwater use in a particular area. Map 4 illustrates the well density in the planning area in the number of wells per square mile. As one can see, the highest well densities are located in shallow, alluvial aquifers close to population centers.

On BLM-administered lands in the planning area, wells are primarily used for stock water. Artesian aquifers are ideal because they can supply water under pressure without a power source. Many springs have also been developed for stock water purposes. However, relative to all lands within the planning area, groundwater use on BLM-administered lands is small. Table 2-9. shows the total number of points of diversion for wells and springs on various land ownership in the planning area.

Table 2-9
Points of Diversion for Wells and Springs by Land Ownership

Well/Spring by Surface Owner	BLM	Private	State	Other Federal
Well	84	11,213	215	169
Spring Box		345	5	433

2.4.1.3 Trends

Similar to stream flow and precipitation data, groundwater level and water quality measurements must be collected over long periods of time to be useful. Long-term data allow managers and others to determine normal water levels in wells, changes in water levels relative to climatic conditions, responses of water levels to development, and long-term water quality trends. The State of Montana monitors 996 wells as part of their statewide monitoring network.

Evaluation of the static water levels over time for the wells in the planning area was too variable to establish trend for a given aquifer or region in scope and scale of the planning area. However, generally, the static water levels of most aquifers appeared to correlate with precipitation, which is highly variable. Causation can be difficult to determine in the groundwater environment because the travel time of groundwater moving through an aquifer is very slow (i.e., can be measured in years instead of seconds).

There are roughly 200,000 wells registered in Montana (MBMG GWIC), and more than half of those were drilled in the past 20 years (Metesh, 2012). More than 6,000 wells were drilled in 2004 (Metesh, 2012). By far, the rate of growth has been for domestic wells, which accounts for 85 to 90 percent of wells drilled in a given year (Metesh, 2012). There has also been a notable increase in the number of wells drilled for irrigation use. This trend was temporarily disrupted by the economic downturn in 2008 but, in general, the number of domestic wells tends to mimic population growth (Metesh, 2012).

Specific to BLM-administered lands in the planning area, in the last 20 years, the BLM has plugged at least 14 flowing wells in the Eagle Formation. The potentiometric surface, which is actually located above the land surface in an artesian well, increased in the Eagle Formation in northeast Fergus County and northern Petroleum County.

While not located in the planning area, Drake and Bauder (2005) found increases in nitrate-nitrogen levels in groundwater in the Helena, Montana, area over a 32-year study period. Urban development and concurrent loss of native and agricultural properties were the main changes in land use over the

study period. Nitrate-nitrogen increases were most evident in areas with a high density and unpermitted septic systems. It is reasonable to assume that increases in the planning area of small-acreage, 2 to 40 acres, rural ranchette, or ex-urban landowners has increased exposure and risk of groundwater nitrate-nitrogen contamination (not necessarily that it has).

2.4.1.4 Forecast

In the Northwestern Great Plains and the Middle Rockies Ecological Regions, change agents that are forecast to potentially affect water resources include urban/suburban development/vacation homes; climate change/drought; sodbusting/agricultural intensification; nonnative species invasions; groundwater withdrawals and drawdown; surface water diversion; and saline/nutrient and other discharges associated with energy development, agriculture, and mining (REA Memo 1).

Montana's population is growing and the population is expected to continue to rise. The fastest growing population segment locally is that of the small acreage, 2 to 40 acres, rural ranchette, or ex-urban landowner. Small subdivision water systems, cisterns, and individual wells supply their domestic water needs. Because most of the easily developable surface water has been appropriated, an increased reliance on groundwater is likely in the future. With Montana's growing population, there is likely to be an increased reliance on groundwater, particularly in shallow aquifers close to population centers. While this development would not occur on BLM-administered lands, the larger issue is that it could affect groundwater availability and connected surface water flows on public land.

While there is much debate regarding climate forecast models, GHGs, and man's contributions to global warming, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level" (Climate Change SIR, BLM, 2010). While long-range regional changes might occur within this project area, it is impossible to predict precisely when they could occur. A warmer climate and prolonged periods of drought in the planning area could result in a decrease of groundwater recharge.

As Montana's population and demand for natural resources grows, the forecast would be for increased threats to water resources. Resource extraction (mining, coal, oil, and gas) and related processing and transmission facilities pose risks to groundwater resources. Oil and gas operations have the potential to impact groundwater quality; however, safeguards such as casing design and selection of injection well receiving horizons are protective of groundwater quality.

There is oil and gas interest in the Heath Formation in the planning area, which lies above the Madison Aquifer. Oil and gas exploration, development, and processing (including hydraulic fracturing) have the potential to increase the risk of exposure to groundwater contamination in the Madison.

In summary, the water quantity and quality forecast for the planning area would likely include an increased use of groundwater quantity. An increase in potential stressors to water quantity and quality for both surface and groundwater is also likely.

2.4.1.5 Key Features

Groundwater resource features that could guide land use allocation or management decisions include:

- Source water protection areas for public water supplies (in particular those public water supplies developed in surficial aquifers);
- Important groundwater features such as Giant Spring and Big Spring;

- Recharge areas for important aquifers such as the Madison;
- Floodplains and quaternary alluvium of modern day channels; and
- Riparian-wetland areas.

A public water supply is a system that supplies water for human consumption and has at least 15 service connections or regularly provides water to at least 25 persons daily for a minimum of 60 days in a calendar year. The MDEQ Source Water Protection Program has delineated source water protection areas for public water supplies based upon the source of the drinking water supply, the hydrologic and hydrogeologic setting, and potential contamination threats. Table 2-10 identifies the amount of BLM-administered lands located in source water protection areas for surface and groundwater source water protection areas. Public water supplies developed in alluvial aquifers are particularly vulnerable to contamination.

Table 2-10

Amount of BLM-administered Lands Located within Source Water Protection Areas

Source Water Protection on BLM-managed Surface and Subsurface		
BLM Surface		100
BLM Subsurface		
	All	1,857
	Coal	1,976
	Oil and Gas	1,596
	Other	671
	Restricted	412

Giant Spring and Big Spring are important groundwater features in the planning area. Giant Spring in Cascade County near Great Falls, Montana, is home to a Montana State Park, a coldwater fish hatchery, and the head of the Roe River. Some of the water is bottled for human consumption. Big Spring in Fergus County near Lewistown, Montana, supports the largest coldwater fish hatchery in the State, provides the drinking water for the community of Lewistown, and is the source of Big Spring Creek, a blue-ribbon trout fishery and significant irrigation water source. These springs are fed by the Madison Aquifer. The role of Montana's mountain ranges is important because the Madison Aquifer, as well as many other important aquifers, outcrop and are uplifted around the edges of the mountains. Seepage from precipitation and streams recharge the aquifers in these outcrop locations. While the springs are not under the jurisdiction of BLM, there are public lands/minerals located on the recharge areas for these springs. Map 5 portrays the BLM lands and minerals located on recharge areas of the Madison Aquifer.

Floodplains, alluvium, and riparian-wetland areas are important groundwater features because these areas are often where the interface between groundwater and surface water occurs. Often these are locations of groundwater recharge or groundwater discharge to surface water. Groundwater is often near the land surface on these features; thus, it is vulnerable to contamination in these areas. Riparian-wetland areas are important water quantity and quality features. They provide important water and sediment storage. Wetlands and riparian areas can play a critical role in reducing nonpoint source pollution by intercepting surface runoff, subsurface flow, and certain groundwater flows. Their role in water quality improvement includes processing, removing, transforming, and storing such pollutants as sediment, nitrogen, phosphorus, and certain heavy metals. Thus, wetlands and riparian areas buffer receiving water from the effects of pollutants and/or prevent the entry of pollutants into receiving

waters. Current wetland and riparian area conditions and management are described in the riparian section of this document.

2.4.2 Surface Water Resources

This section discusses surface water quantity and quality and describes current water management practices in the planning area. Water resources are particularly important in the semiarid environment that characterizes the planning area. The BLM manages water resources both for resource values (e.g., watershed function, wildlife, fisheries, and riparian systems) and resource uses (e.g., recreation and stock water) within a framework of applicable state and federal water laws and agency policies.

The planning area is located within the Northwestern Great Plains and the Middle Rockies Ecological Regions (REA Memo 1). Nearly all surface water flows into the Missouri River and the main hydrologic basins are the Marias, Musselshell, Fort Peck Lake, and Upper Missouri Basins (see Map 2-6). A very small portion of the planning area flows into the Pend Oreille and Upper Yellowstone Basins. Table 2-11 identifies the land ownership, including BLM-administered lands, within each subbasin in the planning area.

Table 2-11
Planning Area Land Ownership in the Major Hydrologic Basins and Associated Subbasins

Basin	Subbasin	BLM	Private	State	Other Federal	Water	Total	Percentage BLM
Fort Peck Lake		162,173	2,439,602	279,077	413,396	6,732	3,300,980	4.9%
	Arrow	36,274	602,655	117,111	29,574	3,380	788,993	4.6%
	Bullwhacker-Dog	20,554	293,962	39,744	2	154	354,417	5.8%
	Ft Peck Reservoir	70,463	227,868	26,002	84,272	3,152	411,758	17.1%
	Judith	34,881	1,315,098	96,217	299,528	46	1,745,770	2.0%
Marias		16,427	1,522,138	160,305	419,445	5,122	2,123,438	0.8%
	Cut Bank	0	0	0	1,529	0	1,529	0.0%
	Marias	176	620,492	44,410	14	288	665,380	0.0%
	Teton	15,218	761,648	98,564	106,563	0	981,993	1.5%
	Two Medicine	1,034	139,994	17,332	311,326	4,834	474,520	0.2%
Musselshell		420,224	1,600,441	148,118	226,770	3,342	2,398,894	17.5%
	Box Elder	120,691	578,428	47,349	1,606	2,329	750,402	16.1%
	Flatwillow	56,159	331,128	25,724	16,736	0	429,748	13.1%
	Lower Musselshell	227,886	338,553	37,551	24,168	999	629,157	36.2%
	Middle Musselshell	13,837	127,767	8,860	7,102	0	157,566	8.8%
	Upper Musselshell	1,641	224,527	28,631	177,133	15	431,947	0.4%
Pend Oreille		40	23,810	2,266	266,456	38	292,610	0.0%
	Blackfoot	40	23,810	2,266	225,468	38	251,622	0.0%

Basin	Subbasin	BLM	Private	State	Other Federal	Water	Total	Percentage BLM
	South Fork Flathead	0	0	0	40,886	0	40,886	0.0%
Upper Missouri		55,624	3,299,963	312,756	1,079,384	12,959	4,760,686	1.2%
	Sun	12,776	630,961	99,056	457,829	832	1,201,455	1.1%
	Belt	3,459	314,561	12,204	181,045	0	511,269	0.7%
	Smith	11,248	879,950	76,965	315,307	91	1,283,561	0.9%
	Upper Missouri	1,288	162,065	21,905	8,671	89	194,017	0.7%
	Upper Missouri-Dearborn	26,853	1,312,398	102,623	116,512	11,946	1,570,332	1.7%
Upper Yellowstone		0	12,761	322	17,104	0	30,187	0.0%
	Shields	0	12,756	322	17,099	0	30,178	0.0%

* This table includes all subbasins where acreages within the planning area are in excess of 100 acres. Therefore, those subbasins where acreage is less than 100 acres are not included.

2.4.2.1 Indicators

Natural processes and human actions influence the chemical, physical, and biological characteristics of water. Indicators of water quality include:

- Chemical characteristics (e.g., pH, conductivity, and dissolved oxygen)
- Physical characteristics (e.g., sediment, temperature, and color)
- Biological characteristics (e.g., macro-invertebrates, fecal coliform, and plant and animal species)

Under the responsibilities required with the Federal Clean Water Act (CWA) (33 USC § 1251 et seq. [1972]) and the Montana Water Quality Act (75-5-301,302 MCA), the State of Montana developed water quality standards to protect the historic and designated beneficial uses of the State's waters. Recognizing the high variability in surface water quality, the State's waters have been grouped into classes that have different numeric and narrative criteria for meeting water quality standards. Water bodies within the State have been assigned a use class, and have water quality standards to protect the beneficial uses of their water. In addition, water quality must be maintained to protect historic uses of water regardless of the assigned use class.

A qualitative indicator of water quality conditions in the planning area are those streams that do not meet water quality standards or fully support their beneficial uses. The MDEQ is responsible for determining which water bodies do not support their beneficial uses and developing a total maximum daily load (TMDL) for pollutants of concern. A TMDL is the allowable pollutant loading from all sources (point, nonpoint, and natural background) established at a level necessary to achieve compliance with applicable surface water quality standards.

While the MDEQ has the responsibility for determining which water bodies do not meet water quality standards, the BLM is responsible for managing sources of pollutants on BLM-administered lands. An important indicator of sources of nonpoint source pollutants is the functional condition of BLM-administered lands. Nonpoint source pollutants are those that arise from an ill-defined source such as runoff from cultivated fields or grazed lands. Of particular importance for mitigating nonpoint source pollutants is the proper functioning condition (PFC) of streams and associated riparian-wetland areas.

Based upon a 2010 memorandum of understanding (MOU) between the BLM and MDEQ, and using watershed function as a leading indicator of water quality (Aron et al., 2013), PFC is recognized as a condition that increases the likelihood that these areas will not produce unacceptable amounts of nonpoint source pollution.

As previously mentioned, the BLM manages surface water for protection of values (e.g. watershed function, fisheries, riparian-wetland, and wildlife habitat, etc.). The BLM also manages surface water for use to support BLM programs and activities such as recreation and livestock grazing programs.

The planning area contains a number instream flow water rights to support fisheries and riparian-wetland values. Most of these water rights are held by the Montana Department of Fish, Wildlife and Parks (MFWP), but some are held by the FWS and the BLM. The ability of surface waters to meet the instream flow values is an indicator of whether or not surface water quantity is adequate to support watershed function and associated values. Furthermore, it is also an indicator of surface water quantity availability for use on those particular streams.

A number of basin closures exist within the planning area. The State of Montana has the authority to control or close river basins to certain types of water appropriations because of water availability problems, water contamination problems, and a concern for protecting existing water rights. While each closure may have different restrictions on types of water appropriations and timing, basin closures are an indicator of not only physical availability of surface water but also legal availability of surface water.

Irrigated agriculture is the largest use of surface water in Montana (*Montana Nonpoint Source Management Plan*); however, the largest use of surface water by the BLM is in pits, dams, and reservoirs. The number of water developments on BLM-administered lands and other ownerships within the planning area is an indicator of the current level of surface water use as well as an indicator of potential need for water development to support BLM programs.

2.4.2.2 Current Condition

Section 305(b) of the CWA requires a biennial report from the State that presents a summary of the water quality conditions. Included in this report is the CWA Section 303(d) List, which lists those waters of the State that have been found to have impaired water quality. Appendix C identifies the waters on BLM-administered lands in the planning area listed as water quality impaired.

The LFO manages approximately 631 miles of perennial and intermittent streams. About 57 miles (9 percent) of this total has been designated as impaired by MDEQ. The primary pollutants affecting these streams are sediment, nutrients, specific conductance, metals, riparian alterations, flow alterations, and temperature, with the primary sources being natural, grazing (rangeland and riparian), impacts from abandoned mine lands, channelization, and a loss of riparian habitat.

An important indicator of sources of nonpoint source pollutants is the functional condition of BLM-administered lands. Of particular importance for mitigating nonpoint source pollutants is the PFC of streams and associated riparian-wetland areas. Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- Dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve floodwater retention and groundwater recharge;

- Develop root masses that stabilize streambanks against cutting action;
- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses;
- And support greater biodiversity (USDI, 1998).

It's not that a reach of stream being in PFC implies that water quality is good (i.e., poor water quality in results in poor water quality out). However, it does imply that on that particular reach, the condition of streamside vegetation and channel characteristics are adequate to minimize nonpoint source pollutants. Adequate streamside vegetation minimizes erosion and traps sediment. It filters nutrients and fecal coliform entering the stream, and maintains channel widths and depths that dissipate stream energy, decrease temperature and dissolved oxygen, and process sediment. The condition of PFC leads to many water quality values being maintained.

While it appears that BLM management may, at least partially, be contributing to the impairment of twenty two streams, the actual load from BLM public lands is undetermined. Appendix C displays the percent of the impaired reach on BLM-administered lands as well as the functional condition of the BLM-administered streams. This information is most useful in regard to those streams impaired by loss of riparian habitat, sedimentation/siltation, nutrients, etc. Those areas where the streams received a PFC rating suggest that BLM-managed riparian habitats are in good condition and that the actual sources of impairment may be located off BLM-administered lands. Those stream reaches that were found to be functional-at-risk or in nonfunctioning condition suggests that BLM or actions authorized by BLM, may be partially contributing to those stream's impairment.

With regard to the elevated heavy metals concentrations and low pH in Armells Creek, Chicago Gulch, and Collar Gulch, the federal Bureau of Mines started a water quality study in to find the potential source of the pollutants. The agency was disbanded before the study could be completed. However, the sampling that was conducted suggested that the source of the metals and low pH is natural.

Montana Tech is in the final year of a three-year study, funded by the BLM, to determine water chemistry for the three drainages of interest, with a focus on documenting concentrations and loads of trace metals and metalloids. The three streams draining the central peaks of the Judith Mountains are acidic (pH < 4) in their headwaters and become pH-neutral with distance downstream. The acidic drainage is attributed to natural weathering of pyrite-rich, hydrothermally-altered igneous rock that outcrops on the crest of the mountain range. Concentrations of copper, zinc, and thallium in the stream waters are locally well above regulatory standards. The study area provides a useful comparison to nearby watersheds that have been heavily disturbed by mining (provisional information subject to revision, Williams and others).

The State of Montana has the authority to control or close river basins and groundwater aquifers to certain types of water appropriations because of water availability problems, water contamination problems, and a concern for protecting existing water rights. The five different types of closures include controlled groundwater areas, petitioned surface water basin closures, department ordered Milk River closures, legislative closures, and compact closures.

While each closure may have different restrictions on types of water appropriations and timing, basin closures are an indicator of not only physical availability of surface water but also legal availability of surface water. A basin closure indicates that surface water quantity in those basins may be limited at times to support fisheries, watershed function, riparian-wetland values, or water quality. It also indicates that surface water quantity available for use may be physically and legally limited, especially at certain times of the year.

Table 2-12 identifies the basin closures within the planning area and the amount of BLM-administered lands within each closure.

Table 2-12
Basin Closures within the Planning Area

	BLM	Private	Other Federal	State	Water
Administrative Rule Closure					
Musselshell River	25,330	98,216	8,272	12,386	728
Legislative Closure					
Teton Basin	14,725	711,238	95,390	90,060	
Upper Clark Fork Basin	19	23,776	223,669	2,309	38
Upper Missouri Basin	47,850	2,526,659	864,693	262,623	8,391

Most of the BLM-administered lands within the planning area are not located within a basin closure. However, there are a number of instream flow rights held by MFWP, FWS, and BLM. Much of the BLM-administered lands in the planning area are located in watersheds that drain into the Charles M. Russell (CMR) National Wildlife Refuge (NWR). The CMR is administered by FWS, and the FWS holds a number of instream flow water rights to support the habitat needs of the refuge. The US Geological Survey (GS) developed a scientific investigations report 2009-5009 for estimating streamflow characteristics for the CMR NWR (Sando, et al., 2009).

Table 2-13 identifies the CMR instream flow water rights in the planning area and monthly flow statistics from the GS SIR 2009-5009. Entries shaded in blue were quantified directly by USGS and were taken from the SIR 2009-5009 report. Others were calculated using basin characteristics and formulas from the report. Those streams shaded in red have drainage areas less than 70 square miles. The models developed in the report were applicable for drainage areas between 70 and 2,551 square miles, and caution should be used for those drainage areas outside of those bounds. However, it is the best information available.

Table 2-13
CMR Instream Flow Rights and Monthly Flow Statistics

Stream Name	Instream Flow Right (cfs)	QM – Mean Annual Flow	Monthly Flow Statistics	March	April	May	June
Alkali Creek	0.5	1.4	Q.80	0.25	0.15	0.09	0.11
			Q.50	1.86	0.38	0.29	0.42
			Q.20	11.24	1.48	0.93	1.83
			Q _{mm}	7.48	2.23	0.77	1.60
Armells Creek	1.0	24	Q.80	2.4	1.1	0.7	2.6
			Q.50	28	6.2	13	22
			Q.20	144	14	124	128
			Q _{mm}	67	14	64	97
Carroll Coulee	0.5	2.7	Q.80	0.50	0.30	0.17	0.22
			Q.50	3.66	0.75	0.56	0.83
			Q.20	22.09	2.90	1.82	3.59

Stream Name	Instream Flow Right (cfs)	QM – Mean Annual Flow	Monthly Flow Statistics	March	April	May	June
			Q _{mm}	14.71	4.39	1.51	3.15
Crooked Creek (Sacagawea River)	0.5	12	Q.80	2.2	1.3	0.72	0.95
			Q.50	16	3.2	2.4	3.6
			Q.20	95	12	7.8	15
			Q _{mm}	63	19	6.5	14
Sand Creek	0.5	3.8	Q.80	0.71	0.42	0.24	0.31
			Q.50	5.16	1.05	0.80	1.17
			Q.20	31.16	4.09	2.57	5.06
			Q _{mm}	20.74	6.19	2.13	4.44
Soda Creek	0.5	2.3	Q.80	0.42	0.25	0.14	0.18
			Q.50	3.07	0.63	0.47	0.70
			Q.20	18.52	2.43	1.53	3.01
			Q _{mm}	12.33	3.68	1.27	2.64
Two Calf Creek	0.5	6.8	Q.80	1.3	0.75	0.43	0.56
			Q.50	9.3	1.9	1.4	2.1
			Q.20	56	7.4	4.6	9.1
			Q _{mm}	37	11	3.8	8

Definitions – QM = mean annual stream flow; Q_{mm} = mean monthly stream flow; Q.80 = 80 percent exceedence monthly stream flow (represents dry years with 4 out of 5 years exceeding this stream flow); Q.50 = median monthly stream flow; Q.20 = 20 percent exceedent monthly stream flow (represents wet years with 1 out of 5 years exceeding this stream flow).

Source: GS SIR, 2009-5009.

Mean annual stream flow (QM) exceeds the instream flow water rights, and typically the mean monthly stream flow (Q_{mm}) exceeds the instream flow values during the four-month period between March and June. This would indicate that surface water quantity is generally adequate to meet the instream flow needs as well as water availability for use in those watersheds.

The effect of stored water in pits, dams, and reservoirs on instream flows and riparian-wetland habitat conditions on ephemeral and intermittent streams is in need of further study. An evaluation of the hydrologic effects of stock ponds on a prairie watershed was completed by Womack (2012) on the Box Elder Creek Watershed on the north side of Fort Peck Reservoir. The Box Elder Creek Watershed had a pond density of 1.2 ponds/square mile, and the ponds effectively disconnected about 17 percent of the watershed (Womack, 2012). Depending on the storm frequency modeled, this resulted in a reduction in peak flows by 12.7 to 24.1 percent and a reduction in runoff volume by 10.1 to 16.8 percent (Womack, 2012). A plausible evaluation technique for determining the effect of storage impoundments on instream flows on ephemeral and intermittent streams would be to evaluate the effective drainage area of a watershed disconnected by impoundments, and this value would be used in the drainage characteristics for a given stream. However, further consideration is warranted.

Two additional, important streams in the planning area are the Judith River and Arrow Creek. The BLM holds federal reserved water rights for instream flows to protect riparian habitat conditions in the Upper

Missouri River Breaks National Monument (UMRBNM). The instream flow value for the Judith River is 160 cubic feet per second (cfs), which is equal and concurrent with the MFWP's instream flow right. On Arrow Creek, the instream flow is 5 cfs between March 1 and July 31.

Figure 2-8 shows the Judith River mean daily discharge from 2,000 to 2010 in comparison to the instream flow rate of 160 cfs. Generally, instream flow conditions are met, and surface water quantity is generally adequate to satisfy instream flow rates and water use requirements. However, while the mean daily discharge most times exceeds the instream flow rate, during dry years, it is often not met in July, August, and September. Surface water quantity on the Judith is limited during this window, particularly above the confluence of Big Spring Creek and Warm Spring Creek.

Long-term gage data on Arrow Creek is lacking; however, Figure 2-9 shows the Arrow Creek instream flow rate during a relatively wet year, 2009, and a relatively dry year, 2007.

Similar to the Judith Watershed, generally, instream flow conditions are met, and surface water quantity is generally adequate to satisfy instream flow rates and use requirements. During dry years, surface water quantity can be very limited in July, August, and September.

Figure 2-8

Judith River Mean Daily Discharge versus Judith River Instream Flow (160 cfs)

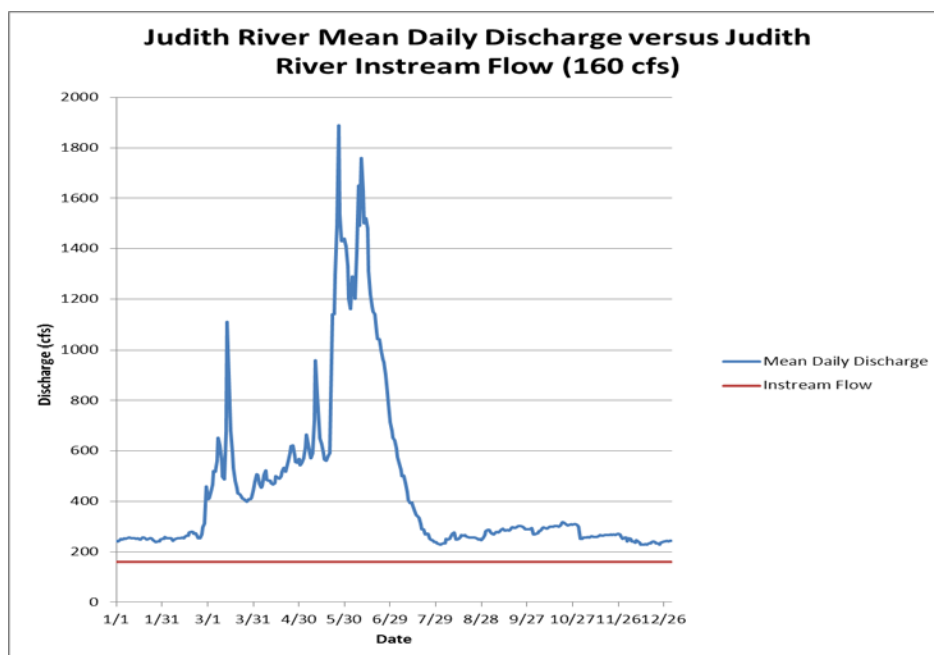
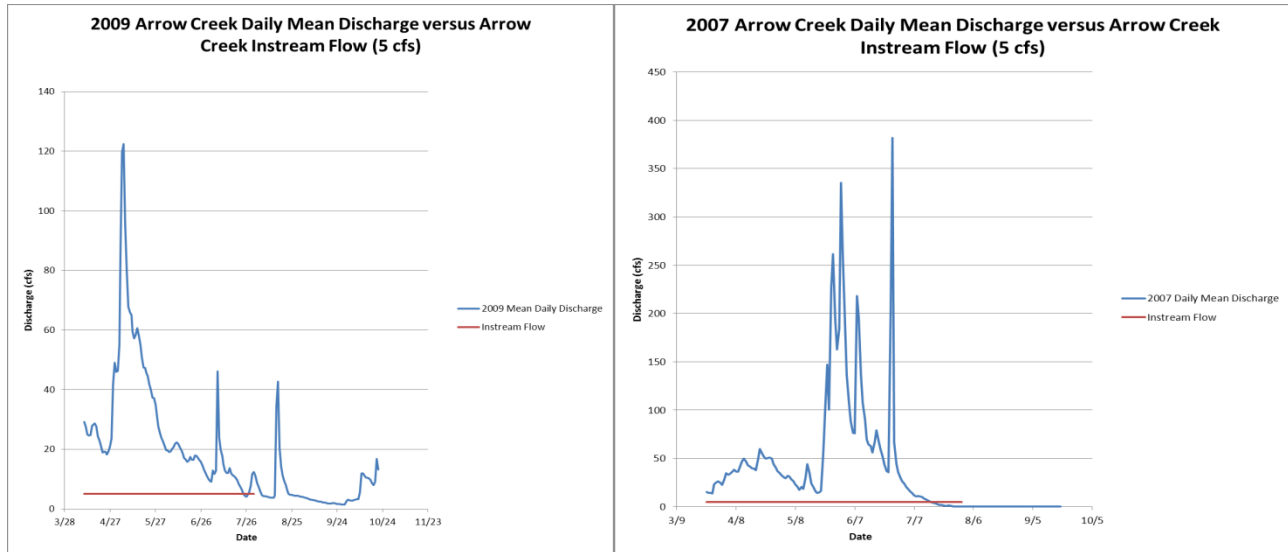


Figure 2-9**Arrow Creek Mean Daily Discharge versus Arrow Creek Instream Flow (5 cfs)**

Water withdrawn for irrigation accounts for more than 97 percent of water withdrawn in Montana each year and waters 2.13 million acres (MDEQ, 2007). Irrigated agriculture is by far the largest use of surface water in Montana and the planning area. However, on lands administered by BLM in the planning area, which are primarily rangelands, the primary use of water is for stock water, wildlife, and fisheries. Table 2-14 lists the number of developed pits/dams/reservoirs, springs and wells within the planning area.

Table 2-14**Developed Pits/Dams/Reservoirs, Springs, and Wells within the Planning Area**

Type of Diversion	BLM	Private	State	Other Federal	Water
Pit	40	346	89	9	2
Pit/Dam	15	47	1	1	0
Dam	899	6790	678	107	79
Dam/Pit	9	18	3	22	0
Well	84	11213	215	169	136
Spring Box	0	345	5	433	0

2.4.2.3 Trends

Water quality in the State of Montana and the planning area has been relatively static to a slightly upward trend. Table 2-15 identifies the number of miles, acres, and count of assessment units of rivers and lakes in water quality Categories 4C and 5 in Montana (MDEQ, 2012). Category 5 waters are where one or more applicable beneficial uses are impaired or threatened, and a TMDL is required to address the factors causing the impairment or threat. Category 4C waters have identified threats or impairments resulting from pollution categories such as dewatering or habitat modification and, thus, a TMDL is not required. While not individually broken out for the planning area, a reasonable assumption is that trend would be similar.

Table 2-15**Size and Count of Assessment Units Assigned to Reporting Categories 4C and 5**

Category	2010					2012				
	River		Lake/Reservoir		Total Count	River		Lake/Reservoir		Total Count
	Miles	Count	Acres	Count		Miles	Count	Acres	Count	
4C	1,825	92	9,005	4	96	1,843	93	9,902	3	96
5	12,637	565	453,848	26	591	12,270	541	481,530	24	565

Source: MDEQ, 2012.

In general, water quality decreases downstream in the watersheds within the planning area as irrigation withdrawals and returns, erosion, and development cumulatively begin to affect water quality. For example, water quality data collected by the Sun River Watershed Group indicates decreasing water quality from the Sun River at Augusta to the Sun River at Fort Shaw.

The Sun River at Augusta was chosen because it is located in the upper portion of the watershed and allows for characterization of water quality in the upper reaches of the watershed, and the Sun River at Great Falls is located near the mouth. According to Hershberger and Bauder (2009), salinity clearly increases as you move from Augusta to Great Falls and is likely sourced from Sun River tributaries.

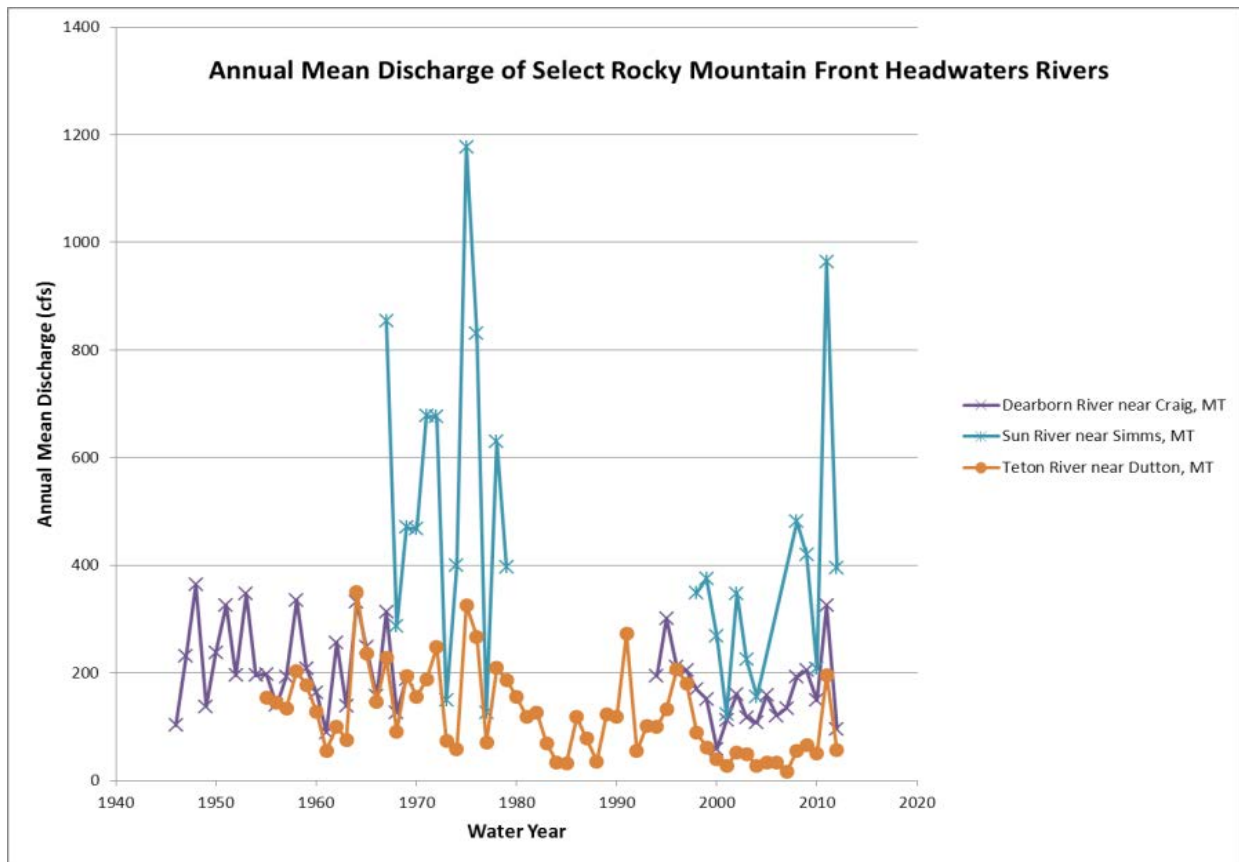
Nutrient loading of nitrogen and phosphorus follows similar patterns of increases between Augusta and Great Falls. Total suspended sediment also increases significantly.

While increased demand for Montana's natural resources, a growing population, and development of open lands is likely to decrease water quality, water quality permitting for both point and nonpoint source pollutants would mitigate some impacts to water quality. Implementation of TMDLs and water quality restoration plans should improve water quality. Improved adaptive management of watersheds through multidisciplinary approaches would be expected to lead to gradual and widespread improvements in water quality and watershed condition. Water quality would be expected to improve as the impacts of surface-disturbing activities on vegetation cover are reduced through implementation of BMPs in riparian and upland areas.

Precipitation in the planning area varies widely and depends largely upon topographic influences. Areas adjacent to mountain ranges in general are the wettest, although there are exceptions where the rain shadow effect appears. The greatest volume of surface water quantity in the planning area occurs during the spring and early summer months with the melting of the winter snowpack. Spring rains in May and June contribute to the melting snowpack during this time. Prairie watersheds often have a double peaked hydrograph with melting snow in March and a second peak is associated with rains in May and June.

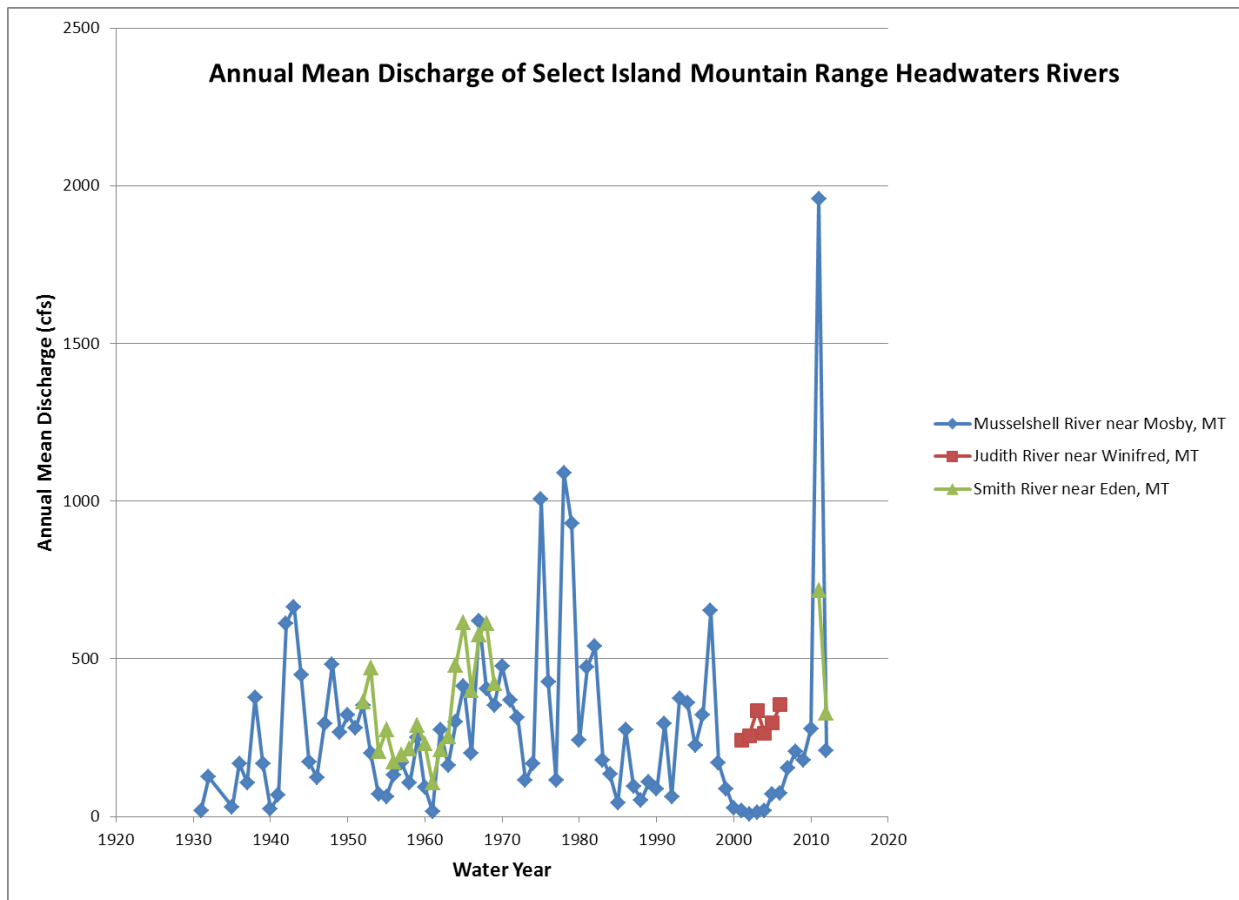
Surface water quantity is highly variable and dependent upon climatic conditions, primarily precipitation. Historical meteorological data suggest that climate conditions have been highly variable in the region, including prolonged cycles of drought. Records of surface water quantity in the planning area corroborate that precipitation and water yield is highly variable. Figure 2-10 shows the annual mean discharge for select rivers originating in the Rocky Mountain Front portion of the planning area.

Figure 2-10
Annual Mean Discharge of Select Rocky Mountain Front Headwaters Rivers



Clearly, water quantity availability is variable. However, for the intents and purposes of land use planning and recent time frame, the period between 2000 and 2005 was characterized by drought and low water yields. On the other hand, the period between 2005 and 2012 was characterized by greater precipitation and water yield than the early part of the century. Water quantity yields from rivers originating in the island mountain ranges show a similar pattern (see Figure 2-11).

Figure 2-11
Annual Mean Discharge of Select Island Mountain Range Headwaters Rivers



Records of surface water runoff are less consistent on prairie watersheds because often they do not sustain perennial surface water flow. Five short-term gaging stations were installed on tributary streams to the CMR NWR by the GS, and they were operated between 2000 and 2004. The purpose was to relate the short-term gage data to data from long-term gage stations to adjust recorded study-period stream flow characteristics. The 5-year period during which the CMR streams were gaged was characterized by unusually dry conditions (Sando, et al., 2009). Stream flow records for long-term gaging stations in or near CMR show that, on a regional basis, annual mean stream flows during the study period (2000 to 2004) were among the lowest for any consecutive 5-year period since the start of stream flow record collection (Sando, et al., 2009).

Water withdrawn for irrigation accounts for more than 97 percent of water withdrawn in Montana each year and waters 2.13 million acres (MDEQ, 2007). Irrigated agriculture is by far the largest use of surface water in Montana and the planning area. Most irrigation water rights have been adjudicated or are in the process of being adjudicated by the State of Montana. Many of the major streams and watersheds in the planning area are closed to new appropriations of surface water, at least at certain times of the year. So, the trend of new appropriations of surface water is more than likely downward.

Even surface water appropriations of streams and rivers outside of closed basins have had limited new appropriations of surface water. For example, in the Judith River and Arrow Creek basins, there have only been 14 water use permits issued since 2001 by the State of Montana. Four of these permits were

groundwater appropriations, and there were no new permits for surface water irrigation. The key message is that most of the easily developable water has been appropriated, and there is downward trend in the amount of new surface water appropriations. Future appropriations are likely to be dependent upon groundwater and water stored during periods of runoff.

2.4.2.4 Forecast

In the Northwestern Great Plains and the Middle Rockies Ecological Regions, change agents that are forecast to potentially affect water resources include urban/suburban development/vacation homes, climate change/drought, sodbusting/agricultural intensification, nonnative species invasions, groundwater withdrawals and drawdown, surface water diversion, and saline/nutrient/ and other discharges associated with energy development, agriculture, and mining (REA Memo 1).

Montana's population is growing and the population is expected to continue to rise. The fastest growing population segment locally is that of the small acreage, 2 to 40 acres, rural ranchette, or ex-urban, landowner. Small subdivision water systems, cisterns, and individual wells supply their domestic water needs. While no urban/suburban development would occur on BLM-administered lands, development on lands adjacent to BLM-administered lands could affect water quantity and quality on BLM land. Because most of the easily developable surface water has been appropriated, an increased reliance on groundwater is likely in the future. Disturbance and soil compaction associated with development can increase the magnitude and volume of stormwater runoff, and the timing of runoff can also be affected. This can cause indirect effects of increased erosion and sedimentation, as well as decreases in the quality of other water quality parameters downstream.

The following discussion on climate change/drought is presented knowing that there are many unknowns associated with climate change. While there is much debate regarding climate forecast models, GHGs, and man's contributions to global warming, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level" (Climate Change SIR, BLM, 2010). The Climate Change SIR forecasts the following changes to water resources for a warming climate in the mountain west and Great Plains regions:

- Earlier snowmelt means that peak streamflow would be earlier, weeks before the peak needs of ranchers, farmers, recreationalists, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall. In the fall, western Montana may see little change in precipitation while the northwestern portion of the state may experience 5 to 10 percent increases.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent, but northwestern Montana may see little change in annual runoff. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures, which could also lead to more fishing closures.
- Conditions in Montana wetlands across much of the northern part of the state are predicted to remain relatively stable, although some wetland habitat near Cut Bank is predicted to degrade to less favorable conditions.

While long-range regional changes might occur within this project area, it is impossible to predict precisely when they could occur.

As Montana's population and demand for natural resources grows, the forecast would be for increased threats to water resources. Resource extraction (mining, coal, oil, and gas) and related processing and transmission facilities pose risks to aquatic resources. Disturbance and soil compaction associated with development can increase the magnitude and volume of stormwater runoff and the timing of runoff can also be affected. This can cause indirect effects of increased erosion and sedimentation, as well as decreases in the quality of other water quality parameters downstream. Saline waters, which may accompany oil, gas, and natural gas processing, are also a water quality stressor if not properly discharged (REA Memo 1).

In summary, the water quantity and quality forecast for the planning area would likely include an increased use of groundwater quantity because most easily appropriated surface water has been developed. An increase in potential stressors to water quantity and quality for both surface and groundwater is also likely.

2.4.2.5 Key Features

Water resource features that could guide land use allocation or management decisions include:

- Source water protection areas for public water supplies;
- Water quality impaired streams;
- Those water bodies with uses that include sensitive aquatic life (e.g., special status species such as westslope cutthroat trout, Collar Gulch ACEC, etc.);
- Floodplains (i.e., Federal Emergency Management Agency (FEMA) designated and 100-year floodplains); and
- Riparian-wetland areas.

A public water supply is a system that supplies water for human consumption and has at least 15 service connections or regularly provides water to at least 25 persons daily for a minimum of 60 days in a calendar year. The MDEQ Source Water Protection Program has delineated source water protection areas for public water supplies based upon the source of the drinking water supply, the hydrologic and hydrogeologic setting, and potential contamination threats. Table 2-10 identifies the amount of BLM-administered lands located in source water protection areas for surface and groundwater source water protection areas.

Those streams that are listed as water quality impaired are key features that could guide land use allocation or management decisions. The water quality impaired streams on BLM-administered lands are listed in Appendix C.

Streams that have sensitive aquatic life that are dependent upon high quality water are key features. The *Judith Resource Area RMP* designated 1,618 BLM acres in the Judith Mountains an area of critical environmental concern (ACEC) to protect a pure strain of westslope cutthroat trout which is a MFWP state species of special concern. Chicago Gulch, a neighboring stream to Collar Gulch, is being considered as a recovery location for westslope cutthroat trout and could be considered for similar protections. Many of the Rocky Mountain Front area streams also contain populations of westslope cutthroat trout.

Floodplains are those areas that are prone to flooding. Floodplain features are important for stream channel function, which has water quality benefits in itself. In addition, sources of pollutants in floodplains are of greater risk of contaminating water bodies because they will eventually be inundated by water. A very small portion of the planning area (less than 5 percent) has been delineated as a flood hazard area by FEMA, and no areas delineated by FEMA include BLM-administered lands. For unmapped areas, often the 100-year floodplain is considered for flood hazard analysis. A 100-year floodplain is an area that is inundated by water in a flood event with a probability of exceedence of 1 percent. A determination of these areas is completed on a site-specific basis through hydraulic analysis.

Riparian-wetland areas are important water quantity and quality features. They provide important water and sediment storage. Wetlands and riparian areas can play a critical role in reducing nonpoint source pollution by intercepting surface runoff, subsurface flow, and certain groundwater flows. Their role in water quality improvement includes processing, removing, transforming, and storing such pollutants as sediment, nitrogen, phosphorus, and certain heavy metals. Thus, wetlands and riparian areas buffer receiving water from the effects of pollutants and/or prevent the entry of pollutants into receiving waters. It is important to consider that degradation of wetlands and riparian areas can inhibit their ability to treat nonpoint source pollution, and degraded wetlands and riparian areas can also become sources of nonpoint source pollution. Current wetland and riparian area conditions and management are described in the riparian section of this document.

2.5 VEGETATIVE COMMUNITIES

The National Vegetation Classification System (NVCS) will be used to describe existing vegetation types within the Lewistown planning area. The macrogroup level of the NVCS will be used because it provides the level of detail needed to distinguish plant communities at regional and subregional levels and it most easily crosswalks to other vegetation classification systems. Table 2-16 lists NVCS macrogroup vegetation types within the planning area.

Table 2-16
NVCS Macrogroup Classes within the Planning Area

NVCS Mid-Level Macrogroup	Ownership					
	BLM	Private	State	Other Federal	Surface Water	Total
Barren	0	0		3		3
Cool Semi-Desert Alkali-Saline Wetland	6,789	32,123	5,338	8348	234	52,832
Developed & Urban	581	144,345	8,546	6405	516	160,396
Great Basin & Intermountain Dwarf Sage Shrubland & Steppe	6	268	45	296		614
Great Basin & Intermountain Tall Sagebrush Shrubland & Steppe	274,454	1,315,434	164,578	119409	177	1,874,052
Great Plains Badlands Vegetation	64,622	72,745	16,920	23366	570	178,222
Great Plains Brackish Marsh & Saline Wet Meadow	1,760	13,127	3,530	3242	4,714	26,372
Great Plains Cliff, Scree & Rock Vegetation	168	1,317	281	564	13	2,342

NVCS Mid-Level Macrogroup	Ownership					
	BLM	Private	State	Other Federal	Surface Water	Total
Great Plains Floodplain Forest	10,378	236,904	17,180	8981	6,184	279,632
Great Plains Freshwater Wet Meadow, Riparian and Marsh	211	10,524	1,739	3086	101	15,661
Great Plains Mixed-grass Prairie and Shrubland	5,152	227,628	18,205	10928	270	262,183
Great Plains Mixed-grass Prairie & Shrubland	54,735	1,344,214	170,582	58519	1,308	1,629,358
Great Plains Sand Grassland & Shrubland	7,047	88,827	10,638	325	30	106,867
Herbaceous Agricultural Vegetation	4,739	2,582,090	145,813	46524	861	2,780,032
Intermountain Singleleaf Pinyon - Western Juniper Woodland	100	1,306	433	618		2,457
Introduced & Semi Natural Vegetation	8,069	811,213	82,790	12832	321	915,228
Northern Rocky Mountain Lower Montane & Foothill Forest	162,932	563,683	63,934	472878	283	1,263,709
Northern Rocky Mountain-Vancouverian Montane & Foothill Grassland & Shrubland	20,158	934,115	139,877	213153	1,353	1,308,656
Open Water	1,134	14,249	2,458	11118	9,163	38,121
Recently Disturbed or Modified	1,390	42,989	7,973	148711		201,063
Rocky Mountain Alpine Cliff, Scree & Rock Vegetation	1,023	152	70	50779		52,023
Rocky Mountain Alpine Scrub, Forb Meadow & Grassland	260	26	2	13872	1	14,161
Rocky Mountain and Great Basin Flooded & Swamp Forest	1,113	146,288	10,175	33793	1,229	192,598
Rocky Mountain and Great Basin Flooded and Swamp Forest	2,897	39,085	3,640	2058	42	47,723
Rocky Mountain Cliff, Scree & Rock Vegetation	1,718	4,342	234	4693	2	10,989
Rocky Mountain Subalpine & High Montane Conifer Forest	21,678	119,905	18,535	1122563	113	1,282,794
Rocky Mountain Subalpine & Montane Fen	1	4,594	865	131	1	5,591
Rocky Mountain-Vancouverian Subalpine & High Montane Mesic Grass & Forb Meadow	1,057	126,830	6,706	37423	21	172,037
Southern Rocky Mountain Montane Grassland & Shrubland		0	0	0		0

NVCS Mid-Level Macrogroup	Ownership					
	BLM	Private	State	Other Federal	Surface Water	Total
Warm Desert Freshwater Shrubland, Meadow & Marsh	267	12,686	1,401	3859	656	18,868
Western North American Montane Wet Meadow & Low Shrubland	50	7,673	356	4064	31	12,174
Western North American Vernal Pool	0	34	1	0	0	36

2.5.1 Rangelands/Uplands

2.5.1.1 Indicators

Uplands are assessed according to Land Health Standard 1 – uplands are in proper functioning condition (PFC). This means that soils are stable and provide for the capture, storage, and safe release of water appropriate to soil type, climate, and landform. The amount and distribution of ground cover (e.g., litter, live and standing dead vegetation, micro-biotic crusts, and rocks/gravel) for identified ecological site(s) or soil plant associations are appropriate for soil stability. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal. Ecological processes including hydrologic cycle, nutrient cycle, and energy flow are maintained and support healthy biotic populations. Plants are vigorous, biomass production is near potential, and there is a diversity of species characteristic of and appropriate to the site.

As indicated by:

Physical Environment - erosional flow patterns, surface litter, soil movement by water and wind, infiltration, soil crusting and surface sealing, compaction layer, rills, gullies, cover amount, and cover distribution.

Biotic Environment - community diversity, community structure, exotic plants, photosynthesis activity, plant status, seed production, recruitment, and nutrient cycle.

2.5.1.2 Current Condition

Vegetation communities range from subalpine meadows existing in an annual average precipitation zone of 20+ inches on top of the Judith Mountains and Rocky Mountain Front to Wyoming sagebrush communities receiving approximately 12 inches in southern Petroleum County. Due to this diversity, vegetation will be addressed in broad terms. Vegetation will vary between and within types due to local factors including soils, aspect, precipitation, elevation, slope, and ecological condition.

Rangeland vegetation can be grouped into eight broad NVCS macrogroups in the planning area. They are the Great Basin & Intermountain Dwarf Sage Shrubland & Steppe; Great Basin & Intermountain Tall Sage Shrubland & Steppe; Great Plains Badlands Vegetation; Great Plains Mixed-grass Prairie & Shrubland; Great Plains Sand Grassland & Shrubland; Northern Rocky Mountain-Vancouverian Montane & Foothill Grassland & Shrubland; Rocky Mountain Alpine Scrub, Forb Meadow & Grassland; and Rocky Mountain-Vancouverian Subalpine & High Montane Mesic Grass & Forb Meadow.

Table 2-17
NVCS Standard Macrogroups (Rangelands)

NVCS Standard Macro Groups	Acres	% Planning Area
Great Basin & Intermountain Dwarf Sage Shrubland & Steppe	5.5	<1%
Great Basin & Intermountain Tall Sage Shrubland & Steppe	274453.9	41.9%
Great Plains Badlands Vegetation	64621.9	9.9%
Great Plains Mixed-grass Prairie & Shrubland	59887	9.2%
Great Plains Sand Grassland & Shrubland	7047.1	1.1%
Northern Rocky Mountain-Vancouverian Montane & Foothill Grassland & Shrubland	20157.5	3.1%
Rocky Mountain Alpine Scrub, Forb Meadow & Grassland,	260	<1%
Rocky Mountain-Vancouverian Subalpine & High Montane Mesic Grass & Forb Meadow	1057.4	<1%

Great Basin & Intermountain Tall Sage Shrubland & Steppe and Great Plains Badlands Vegetation cover large portions of the field office in Petroleum, Fergus, Choteau, Garfield, and Judith Basin Counties. These areas include approximately 339,074 acres of public land and are within the 10-14-inch precipitation zone. This is primarily a sagebrush/grassland vegetative type consisting of big sagebrush, bunch grasses, and western wheatgrass.

Great Plains Mixed-grass Prairie & Shrubland and Northern Rocky Mountain-Vancouverian Montane & Foothill Grassland & Shrubland largely occur in Powell, Lewis and Clark, Meagher, Teton, Pondera, and Cascade Counties. These areas include approximately 80,044 acres of public land and are within the 14-20-inch precipitation zone. This is primarily a grassland vegetative type consisting of bunch grasses and some deciduous shrubs.

Note: All Macro groups can be found in each county to varying degrees.

The NRCS developed site-specific “Technical Ecological Site Guides” that apply to each of the broad regions. The guides describe the expected soil and vegetative characteristics that should be found on individual ecological sites and the expected departure in condition with respect to varying degrees of management. The information contained in the guides has been used extensively in local planning efforts, including allotment management plans (AMPs).

Standards for Rangeland Health and Guidelines for Livestock Management

Note: These standards and guidelines apply to the BLM Central Montana District.

In August 1997, the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (S&Gs) became effective for all BLM lands in Montana/Dakotas. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands. Rangeland health is the minimum ecological standard, independent of the rangeland's use and how it is managed. If rangeland health is protected, a variety of uses could be appropriate for any particular rangeland. Standards apply to rangeland health and not to the important by-products of healthy rangelands such as more fish, higher livestock weaning weights, regional social and cultural values, increased timber production, economic viability of livestock operations, or higher numbers of game animals. It is the sustainability of the processes of rangeland health that produces these social values and commodities. The S&Gs are intended to maintain healthy and productive public

rangelands that are essential to support long-term grazing and stable communities that rely on the land. Standards are measurable levels of resource quality, condition, or function upon which management decisions are based. It is the BLM's policy to achieve rangeland health standards through management of existing uses when feasible. Standards provide the technical and scientific basis for measuring progress towards healthy productive rangelands. Standards are not expected to recreate theoretical "pristine" rangeland conditions that may have existed before livestock grazing began. It is assumed that most areas will be grazed unless there's no way to graze them and still achieve standards or that the area is dedicated to other uses such as campgrounds, mining, and cultural/historical sites.

At a minimum, state or regional standards must address: watershed function; nutrient cycling and energy flow; water quality; habitat for endangered, threatened, proposed, Candidate 1 or 2, or special status species (SSS); and habitat quality for native plant and animal populations and communities.

Guidelines for grazing management are the types of grazing management methods and practices determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting standards. Guidelines are BMPs, treatments, techniques, and implementation of range improvements that will help achieve rangeland health standards. Guidelines are flexible and are applied on site-specific situations. Guidelines may be adapted or changed when monitoring or other information indicates the guidelines are not effective, or a better means of meeting applicable standards exists.

2.5.1.3 Trends

The LFO is in the process of completing land health assessments to evaluate all of the rangeland health standards. Land health assessments are done on an allotment by allotment basis and occur on all allotments scheduled for grazing permit renewal each year. Appendix D identifies allotments that have current land health assessments completed and the resulting standards conformance review determinations.

Uplands - Observed Trend

Of the allotments with completed assessments, 67 allotments had at least some portions that were not meeting Standard 5 for healthy plant and animal communities, and 71 allotments were not meeting Standard 1, the uplands standard. Causes for failing to meet include the following:

- Historic overgrazing: contributed to reduction in cover of herbaceous plants; loss of native plants, perennial grasses, and forbs; increase in noxious weeds; and encroachment of conifer trees.
- Lack of fire: increase in density and cover of sagebrush, sometimes leading to reduction in cover of grasses and forbs and encroachment of conifer trees.
- OHV and other human recreation use: destruction of vegetation, habitat fragmentation, and introduction of noxious weeds.
- Oil and gas development and ROWs: direct loss of vegetation; change in species composition to early seral stage; introduction of noxious weeds and other undesirable, aggressive, nonnative grasses; and habitat fragmentation.
- Grazing: heavy livestock grazing combined with heavy big game winter use on some sagebrush resulting in poor vegetative vigor, decadent sagebrush with poor recruitment, as well as reduction of native perennial grasses and forbs.
- Development of private lands: physical loss/fragmentation of habitats on private lands due to subdivision and development, thus reducing the connectivity and continuity of habitat on BLM lands.

The BLM can help improve the trends discussed above by monitoring and controlling livestock use of allotments to sustain vegetative health; monitoring and regulating recreational uses, including and enforcing protective stipulations in leases and permits for energy development and other uses of BLM land; and identifying habitat problems related to unbalanced animal populations and working with the appropriate managing agency to resolve them.

Increased knowledge of the vital role of fire in many ecosystems may contribute to changes in the use and management of fire to return to a more normal fire regime which may assist in sustaining the health of the planning area's vegetative communities.

2.5.1.4 Forecast

Although the condition of uplands in the planning area has generally improved, a number of trends/changes (including regional and global changes/trends) could cause a decline in the conditions of rangelands. These could include the following:

- Increased urbanization of the West;
- Increase in human population;
- Increased recreational use/activities (e.g., OHV use);
- Establishment and spread of noxious weeds;
- Increased oil, gas, and coal development and the demand for other natural resources;
- Increased demand for ROWs (e.g., roads and utilities);
- Increased big game (elk) populations;
- Increased demand and supply for water; and
- Global climatic change and possible continuation of the drought.

Increased monitoring efforts and PFC requirements for riparian areas and wetlands should promote a general improvement in riparian-wetland conditions throughout the planning area. Drought and increased utilization are going to put more pressure on managers to closely monitor riparian resources, since many of the assessment areas are in a functioning-at-risk (FAR) upward or unknown trends, making them very vulnerable to any impacts.

2.5.1.5 Key Features

Key features for rangeland vegetation relate to macrogroups associated with upland sites within the planning area; please refer to Table 2-17.

2.5.2 Forest/Woodlands

2.5.2.1 Indicators

Periods of extended drought and wildland fire exclusion have created conditions ideal for insect infestation in large portions of the forested areas in the planning area. Field observations indicate the following:

- Mountain pine beetle has been identified in the Judith, Moccasin, Little Belt, Big Snowy, and Little Snowy Mountains as well as along the Rocky Mountain Front.
- Spruce budworm infestation has been identified in the Judith, Moccasin, Little Belt, Big Snowy, and Little Snowy Mountains.

Present levels of insect infestation are low to moderate throughout the eastern portion of the planning area but have become epidemic in many of the isolated parcels found in the Little Belt Mountains. Additional data is available from the USFS Aerial Insect Disease and Detection Program. It can be found at <http://www.fs.usda.gov/detail/r1/forest-grasslandhealth/?cid=stelprdb5366459>. Condition reports are also available by county to assist BLM in defining current levels of activity and a more detailed assessment of the amount of impacted acres within the planning area.

2.5.2.2 Current Condition

Forested areas in the planning area are a composite of the conifer and deciduous forest types that occur throughout Montana. Species dominance varies with altitude, latitude, slope aspect, or other topographical position; soil characteristics; and climatic regime. The important tree species in the planning area include: ponderosa pine, lodgepole pine, Douglas fir, subalpine fir, Engelmann spruce, limber pine, and aspen. Rocky Mountain juniper is the predominant woodland species found throughout the planning area.

Forested BLM parcels within the planning area exist in scattered ownership patterns except in the Judith Mountains in central Fergus County. Much of the timber exists in isolated parcels with limited or no public access and forest management activities are generally coordinated with adjacent, private landowners. Timber sales, stewardship contracts and agreements, and service contracts are all mechanisms used to accomplish forest management activities throughout the planning area.

There are two separate forest and woodland habitat communities within the planning area mapped through the National Vegetation Classification (NVC) System. The primary forest and woodland ecological systems comprise 28 percent of the planning area and are defined in Table 2-18.

Table 2-18
NVCS Standard Macrogroups (Forest/Woodlands)

NVCS Standard Macro Groups	Acres	% Planning Area
Northern Rocky Mountain Lower Montane & Foothill Forest	162,932	25%
Rocky Mountain Subalpine & High Montane Conifer Forest	21,677	3%

The following is a list and description of the various tree species which make up the existing vegetation types (EVTs) in the planning area.

Aspen (*Populus tremuloides*)

Aspen make up a small percentage of the vegetative community types in the planning area and is found as small stands within the mountain coniferous forest communities. Aspen stands are most abundant in the Judith and Little Belt Mountains. They usually support a dense understory of mixed grasses and forbs with an occasional shrub component.

Aspen vigorously resprout following fire and are often an early seral stage species in forested communities. Many of the aspen stands in the Judith and Little Belt Mountains appear to be climax aspen stands with many showing evidence of invasion by shade-tolerant conifers, which may eventually replace the aspen. Removal of the conifers would promote aspen regeneration (Howard, Janet L., 1996).

Douglas fir (*Psuedotsuga menziesii*)

Douglas fir occurs on all aspects and slopes within the planning area. This forest type favors north- or northeast-facing drainages at the middle elevations in the planning area. The soils are usually shallow, and the slopes are colder and moister than the surrounding habitat. Douglas fir is found intermixed with limber pine, ponderosa pine, lodgepole pine, and aspen.

Numerous acres of Douglas fir throughout the management area are found to be infested with spruce budworm. Most infestation areas are in older stands, decadent stands, or both (Steinberg, Peter D., 2002).

Limber pine (*Pinus flexilis*)

Limber pine occurs on warm, dry sites at low and middle elevations primarily on the fringes of the Rocky Mountain Front and Little Belt Mountains. In addition, sparse pockets can be found intermingled with shrublands located throughout the entire southern portion of the planning area. Limber pine is often found intermingled with other pine or shrubs, most commonly Douglas fir and lodgepole pine at the higher elevations, and juniper and/or sagebrush at the lower elevations (Johnson, Kathleen A., 2001).

Whitebark pine (*Pinus albicaulis*)

Whitebark pine exists at the higher elevations, generally occupying cold and higher mountain forests along the Rocky Mountain Front. Populations of whitebark pine throughout the planning area and across have been severely impacted by past mountain pine beetle outbreaks and by the introduced pathogen, white pine blister rust. Large declines in whitebark pine populations across its range have led to its potential listing under the ESA.

Lodgepole pine (*Pinus contorta*)

Lodgepole pine within the planning area occurs in three different ecological roles: (1) as a seral species to more shade-tolerant tree species; (2) as a relatively stable co-dominant with one or more other species (persistent); and (3) as the only tree layer dominant (persistent or climax). Found primarily in the Judith, Moccasin, and Little Belt Mountains, lodgepole pine grows with nearly all of the other mountain conifers in its range and often forms dense, nearly pure stands. Pure lodgepole pine stands frequently result after repeated fires and where there is no seed source for other species. In pure stands of lodgepole pine, there is seldom an understory of reproduction, though in low-density stands there may be younger trees in the understory. Mixed stands of lodgepole pine and other species are also common, especially stands of lodgepole pine, Engelmann spruce, and subalpine fir at higher elevations, and stands of lodgepole pine and Douglas fir and/or limber pine at mid-to-lower elevations. In mixed stands, the overstory may be either pure lodgepole pine or may contain a mix of the above-mentioned conifer species, with the more shade-tolerant climax species, such as Douglas fir, in the understory. However, lodgepole pine is primarily an aggressive pioneer on disturbed sites, with its occurrence due largely to fire. This is visible in various successional stages of homogeneous stands throughout the Judith, Moccasin, and Little Belt Mountain areas.

In fire-generated stands of similar age (seral stands), trees become susceptible to mountain pine beetle attack at approximately the same time, resulting in large-scale infestations. Where lodgepole pine is persistent or climax, mountain pine beetle infests and kills most large lodgepole pine. The openings created by beetle kills are seeded by lodgepole pine, and the cycle is repeated as other trees reach the size and phloem thickness conducive to beetle populations. Mountain pine beetle and other nonfire

disturbances effectively thin the larger trees and create a mosaic of age classes currently present throughout the planning area.

Subalpine fir (*Abies lasiocarpa*)

Subalpine fir exists at the higher elevations in wetter precipitation zones, generally occupying cold and higher mountain forests in the Judith and Little Belt Mountains.

Subalpine fir is a middle- to upper-elevation mountain conifer. It generally occupies sites with a short growing season caused by cold winters, cool summers, frequent summer frosts, and heavy snowpack. It forms extensive forests between warm and dry lower elevation forests of Douglas fir, lodgepole pine, or Engelmann spruce, and higher elevation alpine tundra. At its lower elevational limits, subalpine fir is often restricted to stream bottoms, ravines, frosty basins, or north exposures. In the Judith Mountains, subalpine fir is found in patches intermingled with Engelmann spruce located on wet, north-facing aspects. It increasingly occupies westerly and easterly aspects with increasing elevation and may occupy all aspects at upper timberline.

Ponderosa pine (*Pinus ponderosa*)

The interior ponderosa pine/bunchgrass type is the most common association throughout the planning area. It is characterized by open grassland interspersed with widely spaced trees. Under ideal conditions, the tree canopy usually covers no more than 25 percent of the ground. Throughout the planning area, stand structure becomes increasingly savanna-like at lower elevations and forested at higher elevations. In the central portions of the planning area, the interior ponderosa pine type merges into plains grassland at lower elevations and limber pine at higher elevations. Limber pine, Douglas fir, and Rocky Mountain juniper are common overstory associates.

Interior ponderosa pine is generally the only forest tree in the northeastern portion of the planning area. On dry sites, it supports an understory of plains grassland species. Understories are typically dense on wetter sites and include species characteristic of Pacific ponderosa pine forests to the west (Arno, Stephen F., 1979).

Poplar Species (*Populus deltoids*)

Cottonwood species are found in the wetter drainage bottoms; the largest concentrations are found along the Missouri and Musselshell Rivers. Many of the stands are mature or over mature and in decline. Regeneration is poor and exacerbated by domestic animals, encroachment of noxious and undesirable species, and wildlife (Taylor, Jennifer L., 2001).

2.5.2.3 Trends

Overall health is in decline for many conifer stands within the planning area. Prolonged drought and overstocking have created an ideal environment for increased mortality caused by insect and disease epidemics. An increase in mountain pine beetle activity in lodgepole stands has been noted and spruce budworm damage is present in Douglas fir stands in the Judith, Moccasin, Little Belt, Big Snowy, and Little Snowy Mountains.

Many of the stands in the ponderosa pine forests in the lower elevations are overstocked and with an increasing understory of juniper. An increase in mountain pine beetle activity has been noted in ponderosa pine throughout the planning area. In addition, ponderosa pine regeneration is encroaching into historic meadows and into aspen stands throughout the planning area.

Aspen clones are in decline in many areas due to drought, disease, and conifer encroachment. The exception to this trend exists in areas where recent wildland fire has occurred. Aspen regeneration is good where fuel loading was low to moderate and poor in areas where heavy fuel loading led to increased fire intensities.

Composition and structural changes are occurring throughout the forested areas. Tree density has increased due to growth in the understory, favoring stand replacement fires. Competition for nutrients, sunlight, and water is weakening trees of all age classes and decreasing overall forest health.

2.5.2.4 Forecast

Lack of management and the exclusion of fire have left the forests largely decadent and in decline. Trees weakened by extended drought and competition for sunlight and water will continue to be infested by insects and disease and could reach epidemic levels. Forest composition and structure will continue to change toward decadence and loss of proper function.

Forest composition and structure will change toward climax species with a denser understory. The continued aging of unmanaged forests will create additional fuels on the ground. If fires occur before the fuel loadings are heavy, they may create openings in dense stands for regeneration and improved wildlife habitat. This is the natural cycle in uneven-aged timber types such as spruce/fir, ponderosa/juniper, and Douglas fir forests.

Where fuel loadings become heavy or extreme, fires will likely be stand-replacing. This is historically what occurs in lodgepole pine and aspen stands. The scale of these fires can be thousands of acres, as evidenced by the current natural lodgepole pine forests, with a very small age range between the oldest and youngest trees in a stand. The continued trend in drought conditions could further upset the diversity and health of forests.

Beetle epidemics in lodgepole pine and Douglas fir are part of a natural cycle encouraged by drought, overstocking, and other factors. Since these forests have adapted to disturbance as part of the ecosystem process, there is little threat of ecological collapse or loss of ecological function from an epidemic. Short-term changes can be dramatic and substantial, but forests are anticipated to regenerate and thrive again. Disturbance becomes problematic when it threatens the uses for which we manage the forest.

Large scale forest mortality may increase wildfire hazard and severity which could significantly modify water yield or quality, alter key wildlife habitat, and impact local economies and infrastructure. Forest management activities could influence profound shifts in age class structure, species diversity, and the amount of live versus dead biomass, either remaining or potentially removed.

Forest health and timber stand improvement activities will continue to be emphasized. Forest activities will be designed to reduce the scope and intensity of existing disease and/or insect epidemics and to reduce the hazard of large scale high intensity wildfires.

As increases in forest density and decadence continue, the probability of insect and disease epidemics amplify. This further stresses the importance of implementing programs to improve timber stands and reestablish healthy forest conditions.

2.5.2.5 Key Features

Key features for rangeland vegetation relate to macrogroups associated with forested sites within the planning area; please refer to Table 2-18.

2.5.3 Riparian-Wetland Communities

This section characterizes the current riparian-wetland conditions in the planning area and describes current management of these communities. Riparian areas are the transition zones between terrestrial and aquatic ecosystems and are often key sites in arid and semiarid environments. These plant communities are found in areas along perennial or intermittent streams, seeps, and springs and make up a relatively small but productive portion of the landscape. Wetlands are areas of hydrophytic vegetation with unique soil characteristics that have developed under the influence of persistent water. Riparian areas and wetlands are not synonymous, but the vegetation communities are often described together in general use. Thus, riparian-wetland areas are described in one section.

Riparian-wetland plant communities make up less than 5 percent of the BLM-administered public land in the planning area, but their value is inversely proportional to their physical extent. Healthy riparian-wetland areas enhance water quality, control erosion, diminish the impact of floods, and act as a stabilizing force during drought. These areas provide biological diversity, stable banks and shorelines, floodplain maintenance, clean and stable water supplies, aquifer recharge, flood energy dissipation and moderation, fish and wildlife habitat, livestock forage, opportunities for recreation, carbon sequestration, and scenery.

The planning area is located within the Northwestern Great Plains and the Middle Rockies Ecological Regions (REA Memo 1). Both of these regions have an arid, cold continental climate with limited riparian-wetland areas. Drought is a common occurrence, which further increases the importance of these spatially limited areas. Because of the spatial rarity of riparian-wetland plant communities, the importance for wildlife habitat, fisheries, water quality, and livestock forage is invaluable.

2.5.3.1 Indicators

There are a number of indicators used to evaluate the condition of riparian-wetland areas. Indicators include plant composition, age class and diversity, stream bank stability, channel morphology and floodplain function, and erosion and deposition rates.

Riparian-wetland areas are subject to Lewistown Land Health Standard 2, which requires that riparian-wetland areas are in PFC or are making significant progress toward PFC. For lotic (swift flowing) systems, a riparian-wetland area is considered to be in PFC when adequate vegetation, landform, or large, woody debris is present to accomplish the following:

- Dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve floodwater retention and groundwater recharge;
- Develop root masses that stabilize streambanks against cutting action;
- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and
- Support greater biodiversity (USDI, 1998).

For lentic (still or slow flowing) systems, riparian-wetland areas are functioning properly when adequate vegetation, landform, or debris is present to accomplish the following:

- Dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality;

- Filter sediment and aid floodplain development;
- Improve floodwater retention and groundwater recharge;
- Develop root masses that stabilize islands and shoreline features against cutting action;
- Restrict water percolation;
- Develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterbird breeding, and other uses; and
- Support greater biodiversity (USDI, 1998).

2.5.3.2 Current Condition

The riparian-wetland diversity of the planning area is extensive, ranging from montane to prairie and desert riparian-wetland vegetation. Vegetative species common to riparian areas vary widely from site to site. Under the NVCS, there are nine riparian-wetland vegetation classes in the planning area. Table 2-19 identifies the vegetation classes and the number of acres within the planning area.

Table 2-19
NVCS Riparian-Wetland Classes

NVCS Standard	BLM	Private	State	Other Federal	Water	Grand Total
Cool Semi-Desert Alkali-Saline Wetland	6,789	32,123	5,338	8348	234	52,832
Great Plains Brackish Marsh and Saline Wet Meadow	1,760	13,127	3,530	3242	4,714	26,373
Great Plains Floodplain Forest	10,378	236,904	17,180	8981	6,184	279,627
Great Plains Freshwater Wet Meadow, Riparian and Marsh	211	10,524	1,739	3086	101	15,661
Rocky Mountain and Great Basin Flooded and Swamp Forest	1,113	146,288	10,175	33793	1,229	192,598
Rocky Mountain and Great Basin Flooded and Swamp Forest	2,897	39,085	3,640	2058	42	47,722
Rocky Mountain Subalpine and Montane Fen	1	4,594	865	131	1	5,592
Warm Desert Freshwater Shrubland, Meadow and Marsh	267	12,686	1,401	3859	656	18,869
Western North American Montane Wet Meadow and Low Shrubland	50	7,673	356	4064	31	12,174
Western North American Vernal Pool	0	35	1	0	0	36
Total	23,466	503,039	44,225	67,562	13,192	651,484

More precise mapping of riparian-wetland habitat in the planning area is available from the FWS's National Wetlands Inventory (NWI). Under the NWI mapping, there are nine riparian or wetland types present in the planning area. Table 2-20 identifies the riparian or wetland type and the number of acres within the planning area. These wetland classes were described by Cowardin, et al. (1979).

Table 2-20

National Wetland Inventory Riparian-Wetland Types

National Wetland Inventory and Riparian Classification	BLM	Private	State	Other Federal	Water	Grand Total
Freshwater Emergent Wetland	2,518	102,965	10,772	22,820	2,645	141,720
Freshwater Forested Wetland	9	587	22	1,296	0	1,914
Freshwater Forested/Shrub Wetland	24	6,511	1,268	1,661	429	9,893
Freshwater Pond	1,280	14,766	1,197	1,506	122	18,871
Freshwater Scrub-Shrub Wetland	94	12,963	588	4,418	967	19,030
Lake	2,252	14,510	1,670	7,363	8,183	33,978
Other	80	1,245	318	134	0	1,777
Riparian Emergent	862	10,383	877	2,038	179	14,339
Riparian Forested	206	10,603	644	5,873	425	17,751
Riparian Scrub-Shrub	115	6,538	506	1,537	157	8,853
River	908	8,009	620	3,740	581	13,858
Riverine	140	5,669	691	1,746	6,125	14,371
Total	8,488	194,749	19,173	54,132	19,813	296,355

* 45.1 percent of the planning area has been updated with riparian data from the Natural Heritage Program. These data include additional information regarding Riparian Emergent, Riparian Forested, Riparian Scrub-Shrub, River, and Riverine. The 45.1 percent of the planning area that has been mapped covers 83.7 percent of BLM surface-managed lands.

A riparian or wetland habitat type is the land area that supports the same primary climax vegetation. It is based on the potential of the site to produce a specific plant community (Hansen, 1995). A community type is an aggregation of all plant communities distinguished by floristic and structural similarities in both overstory and undergrowth layers, and it is a unit of vegetation within a classification (Hansen, 1995). The riparian and wetland habitat and community types that are common in Montana were classified by Hansen, et al. (1995).

Riparian-emergent and freshwater-emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes. In the Northwestern Great Plains portion of the planning area, these sites are often dominated by common spikeweed (*Eleocharis palustris*), beaked sedge (*Carex rostrata*), and Nebraska sedge (*Carex nebrascensis*) habitat types. Low-energy environments often have common cattail (*Typha latifolia*) and hardstem bulrush (*Scirpus acutus*) habitat types. In the Middle Rockies portions of the planning area, beaked sedge, water sedge (*Carex aquatilis*), and Nebraska sedge habitat types are more common.

Riparian and wetland shrub types include shrubs and trees less than 20 feet tall. In the Northwestern Great Plains portion of the planning area, these sites are often dominated by sandbar willow (*Salix exigua*) and yellow willow (*Salix lutea*) community types. In the Middle Rockies portions of the planning area, red-osier dogwood (*Cornus stolonifera*), Wolf's willow (*Salix wolfii*), Geyer willow (*Salix geyeriana*), and water birch (*Betula occidentalis*) community types are more common.

Forested riparian and wetland types are characterized by trees greater than 20 feet tall. In Montana, there are generally two types: those dominated by coniferous trees, and those dominated by deciduous trees. In the Northwestern Great Plains portion of the planning area, deciduous trees dominate with Great Plains cottonwood (*Populus deltoides*) community types, green ash (*Fraxinus pennsylvanica*)/common chokecherry (*Prunus virginiana*), and box elder (*Acer negundo*)/common chokecherry habitat types being common. Mountainous areas in the Middle Rockies portion of the planning area tend to have Douglas fir (*Pseudotsuga menziesii*)/red-osier dogwood habitat types.

The term PFC is used two ways. It is the assessment tool that BLM uses to evaluate the function and condition of riparian-wetland areas, but it is also a defined, on-the-ground condition. The PFC is a state of resiliency that will allow a riparian-wetland area to hold together during high-flow events with a high degree of reliability. This resiliency allows an area to then produce desired values, such as fish habitat, neotropical bird habitat, or forage, over time. Riparian-wetland areas that are not functioning properly cannot sustain these values (USDI, 1998).

A riparian area that is properly functioning has adequate vegetation, landform, or large woody debris present to dissipate stream energy associated with high water flows. A FAR riparian-wetland area is partially functioning, but an existing soil, water, or vegetation attribute is making the area susceptible to degradation. Nonfunctioning (NF) riparian-wetland areas clearly are not providing adequate vegetation, landform, or large woody debris dissipate stream energy. Table 2-21 shows the functional condition of lotic (i.e., swift flowing) riparian systems on BLM-administered lands in the planning area.

Table 2-21
Functional Condition of Lotic Riparian Systems

Functional Condition of Lotic Riparian Systems (Miles)				
PFC	FAR (upward)	FAR (static)	FAR (downward)	NF
425.3	28.9	119.1	17.9	39.8

The planning area contains a very limited amount of natural lentic (i.e., still or slow-moving water) systems. Most of the lentic habitat is associated with man-made reservoirs, ponds, and dams. The dominant classification is palustrine emergent, which is rooted herbaceous vegetation that extends above the water surface (i.e., sedges or rushes). These areas are typically found in the seepage areas below reservoirs and in the depositional areas where water comes into the reservoir.

Because of the limited number of natural lentic areas, many of lentic sites have not been individually assessed, but results similar to those listed in the 2007 Montana Natural Heritage Program (MNHP) *Watershed Assessment of portions of the Lower Musselshell and Fort Peck Reservoir Subbasins* are expected. “Although several reservoirs and stock ponds have been negatively impacted by grazing, our field surveys indicated rangelands across the study area are in generally good condition, and reflect good grazing management.” (Vance and Stagliano, 2007).

Most reservoirs were built for the purpose of watering stock and wildlife or, in some instances, they were constructed as fisheries. As such, the sole use of PFC is not the appropriate inventory tool for condition of these areas. It is a tool that is useful for evaluating the function and condition of natural or slightly-altered riparian-wetland areas within a watershed. It is not intended to be used on highly-altered or man-made structures. For example, it is not appropriate to evaluate a man-made ditch using a lotic PFC assessment and, correspondingly, it is not appropriate to evaluate the function of a man-made stock pond with just a PFC assessment. A PFC assessment could be used in conjunction with a dam condition assessment and/or other aquatic habitat assessments.

Many reservoirs are approaching the end of their functional life and will need to be maintained or abandoned. “Because stock ponds, reservoirs and road-berm wetlands are all dependent on human initiative to maintain them, we considered them all to be functioning at risk, even though most have

vegetation typical of shallow, aquatic bed, semipermanently flooded depressional wetlands in the western Great Plains.” (Vance and Stagliano, 2007).

2.5.3.3 Trends

At the land use plan scale, quantitative trend analysis of riparian-wetland condition is limited. Most existing, quantitative data are associated with site or allotment scale monitoring, and the variability in the type of monitoring data collected makes it difficult to link the site scale monitoring up to a planning area scale quantitative trend determination.

However, some qualitative interpretations of trend can be made from the assessment data. During a PFC assessment, the interdisciplinary team members responsible for the condition determination make an apparent trend call. This apparent trend determination is made by the interdisciplinary specialists. It is based upon visual indicators of improving riparian-wetland condition such as vigorous vegetation, desirable plant species reproducing and forming plant communities, riparian-wetland area widening, stream channel narrowing, increasing floodplain function, as well as numerous other indicators of improving trend.

Those riparian-wetland areas in PFC or those that have a FAR apparent upward trend are in an improving trend. Seventy two percent of the lotic riparian-wetland areas are in an improving or upward trend. Twenty eight percent are in a static or downward trend. Standards for rangeland health have been implemented, and Lewistown Standard 2 requires achieving or making significant progress toward the condition of PFC. Those areas that were not meeting standards because of management activities that are in control of the BLM, such as livestock grazing, have had management actions implemented to address those riparian-wetland areas in a static or downward trend. It would be reasonable to assume that many of these actions would be making progress toward improving conditions, but the relative success of these actions is unknown at this time.

2.5.3.4 Forecast

Riparian-wetland areas are dependent upon the presence of water. In the Northwestern Great Plains and the Middle Rockies Ecological Regions, change agents that are forecast to potentially affect water resources include urban/suburban development/vacation homes, climate change/drought, sodbusting/agricultural intensification, nonnative species invasions, groundwater withdrawals and drawdown, surface water diversion, and saline/nutrient/other discharges associated with energy development, agriculture, and mining (REA Memo 1). Changes to the quantity and quality of water resources indirectly affect the condition of riparian-wetland areas.

Montana’s population is growing, and the population is expected to continue to rise. The fastest growing population segment locally is that of the small acreage, 2 to 40 acres, rural ranchette, or ex-urban, landowner. Small subdivision water systems, cisterns, and individual wells supply their domestic water needs. While no urban/suburban development would occur on BLM-administered lands, development on lands adjacent to BLM-administered lands could affect riparian resources on BLM land. Because most of the easily developable surface water has been appropriated, an increased reliance on groundwater is likely in the future, which can decrease water availability in springs, seeps, and riparian-wetland vegetation tied to alluvial and other shallow aquifers. Disturbance and soil compaction associated with development can increase the magnitude and volume of stormwater runoff, and the timing of runoff can also be affected. This can cause indirect effects of increased erosion and sedimentation in riparian-wetland areas.

The following discussion on climate change/drought is presented, knowing that there are many unknowns associated with climate change. While there is much debate regarding climate forecast models, GHGs, and man's contributions to global warming, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." (Climate Change SIR, BLM, 2010). The Climate Change SIR forecasts the following changes to water resources for a warming climate in the Mountain West and Great Plains Regions:

- Earlier snowmelt means that peak stream flow would be earlier, weeks before the peak needs of ranchers, farmers, recreationists, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall. In the fall, western Montana may see little change in precipitation while the northwestern portion of the state may experience 5 to 10 percent increases.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent, but northwestern Montana may see little change in annual runoff. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures, which could also lead to more fishing closures.
- Conditions in Montana wetlands across much of the northern part of the state are predicted to remain relatively stable, although some wetland habitat near Cut Bank is predicted to degrade to less favorable conditions.

While long-range regional changes might occur within this project area, it is impossible to predict precisely when they could occur.

As Montana's population and demand for natural resources grows, the forecast would be for increased threats to riparian-wetland communities. Resource extraction (mining, coal, oil, and gas) and related processing and transmission facilities pose risks to water and riparian-wetland resources. Disturbance and soil compaction associated with development can increase the magnitude and volume of stormwater runoff, and the timing of runoff can also be affected. This can cause indirect effects of increased erosion and sedimentation, as well as decreases in the quality of other water quality parameters downstream. Saline waters, which may accompany oil, gas, and natural gas processing, are also a riparian-wetland stressor if not properly discharged (REA Memo 1).

In summary, the water quantity and quality forecast for the planning area would likely include an increased use of groundwater quantity, which could affect riparian-wetland resources that are dependent upon groundwater. An increase in potential stressors to water quantity and quality and riparian-wetland areas is also likely.

2.5.3.5 Key Features

Riparian-wetland features that could guide land use allocation or management decisions include:

- Riparian-wetland areas in important wildlife habitats such as Greater Sage-grouse habitat or those streams on the Rocky Mountain Front;
- Riparian woodland forests such as cottonwood gallery forests;

- Riparian-wetland areas that provide habitat for sensitive aquatic life (e.g., special status species such as westslope cutthroat trout, etc.) or buffers around water quality-impaired streams;
- Floodplains (i.e., Federal Emergency Management Agency [FEMA] designated and 100-year floodplains); and
- Quaternary alluvium of modern day channels.

Riparian-wetland habitats are the most productive wildlife habitats, and they benefit the greatest number of wildlife species. Even though riparian-wetland areas are a small percentage of the planning area, they are more productive than the surrounding upland areas, and they attract wildlife for the forage, thermal and other cover, nesting habitat, water, and browse species they provide. Management of riparian-wetland areas in important wildlife habitat should be given careful consideration and can be considered a key feature.

Riparian woodland forests such as cottonwood gallery forests provide valuable cover, shade, and food for a variety of species (Hansen, 1995). Big game use, such as white-tailed deer, mule deer, and elk may be high depending on the time of year (Hansen, 1995). The large trees provide nesting for birds such as bald eagles, ospreys, and great blue herons. A variety of birds and mammals nest in the cavities of large trees, and understory species are used by a host of waterfowl, small birds, and mammals. They are important wind breaks (Hansen, 1995), and they provide important thermal cover, debris recruitment, and streambank stability (Hansen, 1995), which is important for fisheries. Thus, riparian woodland forest is a key riparian-wetland feature.

The requirements for the establishment and recruitment of riparian, pioneer species such as plains cottonwood (*Populus deltoides*) are relatively well known. Plains cottonwood is a pioneer, flood-dependent species. For establishment to be successful, cottonwoods need bare, moist surfaces that are protected from future disturbances (Scott, et al., 1993 and 1996; Scott and Auble, 2002; and Auble, et al., 2005). Most important for long-term maintenance of cottonwood forest is the creation of new, disturbed sites suitable for regeneration from seed. These sites are generally dependent on channel movement, sediment deposition and erosion associated with streamflow variation and infrequent high flow events. However, if the conditions that created the disturbance are repeated in the same locations, those sites are unlikely to be safe enough in the future to allow for recruitment of trees to larger size classes. These processes are important not only for creating new, suitable, bare, moist substrates, but also for moving the active channel away from established sites and for vertical accretion of the floodplain, which moves established cottonwoods into safer positions from water and ice scour. Thus, those areas of alluvium of modern day channels may require consideration to ensure that channel migration processes that are responsible for riparian forest maintenance are allowed to continue. Alluvium that is deposited by a stream channel in its modern day coarse will likely be occupied by active channel at some point in time in the future; therefore, careful management of these features is necessary.

Riparian-wetland areas are important water quantity and quality features, so they are particularly important features around water quality-impaired streams and those streams that have sensitive beneficial uses that are dependent upon high quality water (e.g., special status species such as westslope cutthroat trout, etc.). Wetlands and riparian areas can play a critical role in reducing nonpoint source pollution by intercepting surface runoff, subsurface flow, and certain groundwater flows. Their role in water quality improvement includes processing, removing, transforming, and storing such pollutants as sediment, nitrogen, phosphorus, and certain heavy metals. Thus, wetlands and riparian areas buffer receiving water from the effects of pollutants and/or prevent the entry of pollutants into receiving waters. It is important to consider that degradation of wetlands and riparian

areas can inhibit their ability to treat nonpoint source pollution, and degraded wetlands and riparian areas can also become sources of nonpoint source pollution.

Floodplains are those areas that are prone to flooding. Floodplain features are important for stream channel and riparian-wetland function and, according to Hansen (1995), floodplains are the dominant riparian ecosystem in Montana. A small portion of the planning area has been delineated as a flood hazard area by FEMA. For unmapped areas, often the 100-year floodplain is considered for flood hazard analysis. A 100-year floodplain is an area that is inundated by water in a flood event with a probability of exceedance of 1 percent. A determination of these areas is completed on a site-specific basis through hydraulic analysis.

2.5.4 Special Status Species (Plants)

2.5.4.1 Indicators

According to the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (1997), the primary indicators that special status plant species and their habitats are being maintained or enhanced are that the spatial distribution of the species is suitable to ensure reproductive capability and recovery; a variety of age classes are present; there is connectivity of habitat; and that plant communities are in a variety of successional stages across the landscape.

2.5.4.2 Current Condition

Special status plant species are those species that require particular management attention due to population or habitat concerns. These include species that are federally listed as threatened and endangered (T&E) species or habitats designated as critical, federally-proposed species, proposed critical habitats, federal candidate species, state-listed as T&E, and Montana BLM sensitive species. The BLM accomplishes its special status plant management through coordination with the FWS and the MNHP.

Bureau sensitive species are those species designated by the State Director, usually in cooperation with the state agency responsible for management of the species and state natural heritage program. The BLM sensitive species are those species that:

- Could become endangered in, or extirpated from, a state or within a significant portion of its distribution;
- Are under status review by the FWS and/or the National Marine Fisheries Service (NMFS);
- Are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution;
- Are undergoing significant current or predicted downward trends in population or density such that federally-listed, proposed, candidate, or state-listed status may become necessary;
- Typically have small and widely dispersed populations;
- Inhabit ecological refugia or other specialized or unique habitats; or
- Are state listed but which may be better conserved through application of BLM sensitive species status.

No known sites of federally-listed or proposed plant species are in the planning area. BLM sensitive plant species are known to occur in the planning area. Table 2-22 identifies the species and their global and state rank.

Table 2-22
Sensitive Plant Species in the Planning Area

Common Name	Scientific Name	Global/State Rank	Status*
Scorpidium moss	<i>Scorpidium scorpioides</i>	G4G5/S2	SOC
Fringed Bogmoss	<i>Sphagnum fimbriatum</i>	G5/S1	SOC
Lackschewitz' Fleabane	<i>Erigeron lackschewitzii</i>	G3/S3	SOC
Dwarf Saw-wort	<i>Saussurea densa</i>	G4/S2S3	SOC
Cliff Toothwort	<i>Cardamine rupicola</i>	G3/S3	SOC
Dense-leaf Draba	<i>Draba densifolia</i>	G5/S2	SOC
Divide Bladderpod	<i>Physaria klausii</i>	G3/S3	SOC
Rocky Mountain Twinpod	<i>Physaria saximontana</i> var. <i>dentata</i>	G3T3/S3	SOC
Great Basin Downingia	<i>Downingia laeta</i>	G5/S2S3	SOC
Macoun's Gentian	<i>Gentianopsis macounii</i>	G5/S2	SOC
English Sundew	<i>Drosera anglica</i>	G5/S3	SOC
Slenderleaf Sundew	<i>Drosera linearis</i>	G4/S2	SOC
Austin's Knotweed	<i>Polygonum austinae</i>	G4/S3S4	S & PSOC
Missoula Phlox	<i>Phlox kelseyi</i> var. <i>missoulensis</i>	G3/S3	S & SOC
Beaked Spikerush	<i>Eleocharis rostellata</i>	G5/S3	S & SOC
Water Bulrush	<i>Schoenoplectus subterminalis</i>	G4G5/S3	SOC
Small Yellow Lady's-slipper	<i>Cypripedium parviflorum</i>	G5/S3S4	PSOC
Round-leaved Orchis	<i>Amerorchis rotundifolia</i>	G5/S3	SOC
Sparrow's-egg Lady's-slipper	<i>Cypripedium passerinum</i>	G4G5/S2S3	SOC
Giant Helleborine	<i>Epipactis gigantea</i>	G4/S2S3	SOC
Upward-lobed Moonwort	<i>Botrychium ascendens</i>	G3/S3	SOC

* S = BLM Sensitive; SOC = MT Species of Concern; PSOC = MT Potential Species of Concern.

The international network of Natural Heritage Programs employs a standardized ranking system to denote global (G) (range-wide) and State (S) (Nature-Serve 2006) status. Species are assigned numeric ranks ranging from 1 (highest risk, greatest concern) to 5 (demonstrably secure), reflection the relative degree of risk to the species' viability, based upon available information.

- G1 S1** At high risk because of extremely limited and/or rapidly declining numbers, range, and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
- G2 S2** At risk because of very limited and/or declining numbers, range, and/or habitat, making it vulnerable to global extinction or extirpation in the state.
- G3 S3** Potentially at risk because of limited and/or declining numbers, range, and/or habitat, even though it may be abundant in some areas.
- G4 S4** Uncommon but not rare (although it may be rare in parts of its range), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern.

G5 S5 Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.

Scorpidium moss (*Scorpidium scorpioides*) is found on wet soil in calcareous seeps and fens. There are five known occurrences within the planning area, all near the Rocky Mountain Front. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Threats have not been assessed, and trends are unknown.

Fringed Bogmoss (*Sphagnum fimbriatum*) is found associated with peatlands. There is one known occurrence within the planning area, near the Rocky Mountain Front in Lewis and Clark County. Currently, no known populations occur on BLM-administered lands. Threats have not been assessed, and trends are unknown.

Lackschewitz' Fleabane (*Erigeron lackschewitzii*) is found on open, gravelly, calcareous soil and talus on ridgetops in the alpine and subalpine zones. There are 43 known occurrences within the planning area, all near the Rocky Mountain Front. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Lackschewitz' Fleabane is endemic to Montana and adjacent Alberta though the large majority of the species' range is in Montana. Though many of the individual occurrences are small in size, the species is distributed over a relatively wide area along the Rocky Mountain Front south to the Flint Creek Range. The high elevation habitat reduces the potential for detrimental impacts.

Dwarf Saw-wort (*Saussurea densa*) is found on calcareous soil of talus slopes and rocky, open slopes in the alpine zone. There are 14 known occurrences within the planning area, all near the Rocky Mountain Front. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Dwarf Saw-wort is known from a handful of small occurrences along the Rocky Mountain Front, primarily in the Bob Marshall Wilderness Complex. Threats have not been assessed, and trends are unknown.

Cliff Toothwort (*Cardamine rupicola*) is found on sparsely vegetated, stony soil or talus derived from limestone in the subalpine and alpine zones. There are 13 known occurrences within the planning area, all near the Rocky Mountain Front in Lewis and Clark County. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Cliff Toothwort is a state endemic known from three population clusters. These are in the Mission Mountains, Swan Range, and the Rocky Mountain Front Range. Many occurrences have not been surveyed for 30 or more years and many are based on a single herbarium specimen. However, the species grows at high elevations in rock and scree fields that generally are not subject to disturbance or other threats. Many populations also occur in designated wilderness areas which offer further protection. Additional occurrences likely exist across the known range of the species.

Dense-leaf Draba (*Draba densifolia*) is found gravelly, open soil of rocky slopes and exposed ridges in the montane to alpine zones. There are three known occurrences within the planning area, all near the Rocky Mountain Front in Lewis and Clark County. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. *Draba densifolia* is distributed in the western half of the state in four moderate to large populations, six small occurrences, and nine historical or poorly documented occurrences. Occupied habitats are at moderate to high elevation which help to minimize disturbance to some of the populations. However, livestock grazing, invasive weeds, and off-road, all-terrain vehicle (ATV) use impact some populations.

Divide Bladderpod (*Physaria klausii*) is found on open shale slopes and gravelly areas, typically in bunchgrass communities in the montane to subalpine zone. There are 43 known occurrences within the planning area, all near the Rocky Mountain Front. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Divide Bladderpod is a state endemic restricted to central Montana with the majority of populations occurring in the Big Belt Mountains and extending north to the southern end of the Rocky Mountain Front. Many large populations exist and the species typically occurs on gravelly slopes that are not usually subject to human disturbance.

Rocky Mountain Twinpod (*Physaria saximontana* var. *dentata*) is typically found in limestone-derived talus, fellfields, and gravelly slopes at moderate to high elevations. There are seven known occurrences within the planning area, all near the Rocky Mountain Front. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Rocky Mountain Twinpod is a state endemic known from several counties across central and southern Montana mountain ranges.

Great Basin Downingia (*Downingia laeta*) is found in shallow water and drying mud around ponds and lakes in the valleys and on the plains. There are three known occurrences within the planning area, two of which are located on BLM-administered lands. Great Basin Downingia is rare in Montana, where it is currently known from a few scattered sites in the western half of the state. Most of these sites were documented several decades ago and are in need of follow-up surveys. Current population levels and trends are unknown.

Macoun's Gentian (*Gentianopsis macounii*) is found on wet, organic soil of calcareous fens in the valley and foothill zones. There are three known occurrences within the planning area, all near the Rocky Mountain Front. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Macoun's Gentian is rare in Montana, where it is known from several sites just east of the Continental Divide. It occurs within the Pine Butte Fen, which has been designated by the Montana Native Plant Society as an Important Plant Area (IPA). In the IPA nomination, the following potential threats were identified for the Pine Butte Peatlands. Long-term changes in climate could result in hydrologic changes that adversely affect some species while being beneficial to others. Diversion or modification of the Teton River north of the proposed IPA could reduce or alter subsurface hydrology that feeds the peatlands. Oil and gas development could directly destroy habitat or disrupt hydrology. Mineral rights owned by Montana Department of Natural Resources and Conservation (DNRC) and some private entities within the proposed IPA are currently leased for oil and gas development. Federal mineral rights within the proposed IPA are currently unleased; those in T. 24 N., R. 8 W. are subject to a Congressional mineral withdrawal but those in T. 24 N., R. 7 W. are not. Some other private mineral rights in the proposed IPA are currently not leased. Livestock grazing occurs on a portion of the proposed IPA and could be having an adverse effect on some palatable species; however, it is just as likely, or more likely, that this disturbance is advantageous to some species, such as *Gentianopsis macounii* or *Primula incana*. Fire occurred historically and may have provided disturbance needed by some species. Fire frequency may currently be lower due to fire suppression (MT NPS, 2011).

English Sundew (*Drosera anglica*) is found with sphagnum moss in wet, organic soils of fens in the montane zone. There are two known occurrences within the planning area, near the Rocky Mountain Front in Lewis and Clark County. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. English Sundew is known from over two dozen populations in the state, most of these are moderate- to large-sized, healthy populations. Most

occurrences are on federally-managed lands with several of these in designated wilderness areas, research natural areas, or Glacier National Park which help to protect the occurrences from many potential threats. However, one population is vulnerable to ski area expansion and activity, and the species may be negatively impacted by fire as observations at one location appear to indicate. Plants are also sensitive to, and negatively impacted by, trampling of peat mats on which the species grow.

Slenderleaf Sundew (*Drosera linearis*) is found on wet, organic soil of nutrient-poor fens in the montane zone. There are two known occurrences within the planning area, near the Rocky Mountain Front in Lewis and Clark County. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Slenderleaf Sundew is only known from four populations in Montana, though all are moderate- to large-sized occurrences that are located in either the Bob Marshall Wilderness or Indian Meadows Research Natural Area which afford all known populations some protection from disturbance.

Austin's Knotweed (*Polygonum austinae*) is found on gravelly, often shale-derived soil of open slopes and banks in the montane zone. There are 13 known occurrences within the planning area, 1 of which is located on BLM-administered lands. Austin's knotweed is sparsely distributed in mountainous areas of Montana from the Rocky Mountain Front to the Madison and Gallatin Ranges. Sites are usually on open, gravelly, sparsely-vegetated slopes with shale-derived soils and, as such, are not generally impacted by human activity. Some sites, however, are along forest roads and are susceptible to weed invasion and other disturbances. The probability of finding additional occurrences appears to be good since large areas of suitable habitat across western and central Montana remain unsurveyed for the species.

Missoula Phlox (*Phlox kelseyi* var. *missoulensis*) is found in open, exposed, limestone-derived slopes in the foothills to exposed ridges in the subalpine zone. There are 30 known occurrences within the planning area. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Missoula phlox is a state endemic known from over two dozen occurrences in west-central Montana, most of which are moderate to large sized. Populations occur on a mix of ownerships, including private lands which host several occurrences. Impacts from invasive weeds, recreational use, and development are possible.

Beaked Spikerush (*Eleocharis rostellata*) is found in wet, often alkaline soils, associated with warm springs or fens in the valley and foothills zones. There are four known occurrences within the planning area, all near the Rocky Mountain Front, including occurrences in the Pine Butte Peatlands IPA. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Beaked Spikerush is known from over a dozen extant sites and a few historical locations. Private and state lands host many occurrences that are vital to the viability of the species in the state. The species is vulnerable to hydrologic alteration and development.

Water Bulrush (*Schoenoplectus subterminalis*) is found in open water and boggy margins of ponds, lakes, and sloughs at 0.1-3 m depth in the valley, foothill, and montane zones. There is one known occurrence within the planning area, near the Rocky Mountain Front in Lewis and Clark County. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Water Bulrush has over a dozen known occurrences in western Montana, most of which are moderate- to large-sized populations, primarily on national forest lands. Populations are potentially vulnerable to changes in water levels or increases in nutrient and sediment loads associated with development, agriculture, or adjacent timber harvesting.

Small Yellow Lady's-slipper (*Cypripedium parviflorum*) is found in fens, damp mossy woods, seepage areas, and moist forest-meadow ecotones in the valley to lower montane zones. There are 25 known occurrences within the planning area, near the Rocky Mountain Front in Lewis and Clark County, including an occurrence in the Pine Butte Peatlands IPA, and one isolated occurrence on private lands in Judith Basin County. Currently, no known populations occur on BLM-administered lands, but does occur where BLM manages subsurface oil and gas. Small Yellow Lady's-slipper has many occurrences known from the western half of the state, including a dozen or so historical or poorly documented sites. Many occurrences have small population numbers, though approximately two dozen occurrences are moderate to large populations. Populations occur on a variety of federal, state, and private ownerships with varied land uses and management. A variety of land uses and activities including development, livestock grazing, and timber harvesting may have detrimental impacts to populations. However, Yellow Lady's-slipper appears to be tolerant to some disturbances at low levels and the number of populations scattered over a wide area reduces the risk to the species. A loss of populations or a significant decline in numbers may warrant a relisting as a species of concern in Montana, and populations should continue to be monitored on a semi-regular basis. Moderate to large occurrences should be managed to maintain habitat and viable population numbers.

Round-leaved Orchis (*Amerorchis rotundifolia*) is found in spruce forest around seeps or along streams, often in soil derived from limestone. There are 79 known occurrences within the planning area, near the Rocky Mountain Front. Currently, one known population occurs on BLM-administered lands where BLM manages subsurface oil and gas. Round-leaved Orchis is restricted to the Rocky Mountain Front, Bob Marshall Wilderness Complex, Swan Valley, and the northwest corner of the state. Several dozen occurrences are known in Montana with many being large, healthy populations. However, information on threats faced by the species, as well as trend data, is lacking.

Sparrow's-egg Lady's-slipper (*Cypripedium passerinum*) is found on mossy seeps, or moist places in coniferous forests, often on calcareous substrates. There are over a dozen moderate- to large-sized populations, a few dozen small occurrences, and one historical location. Several of the occurrences are either in designated wilderness areas or in Glacier National Park. The main threat to populations appears to be from potential hydrologic changes.

Giant Helleborine (*Epipactis gigantea*) is found on streambanks, lake margins, fens with springs, and seeps, often near thermal waters. Several dozen occurrences across western and southern Montana are known where it is associated with seeps and springs, fens, and thermal waters. Several sites are likely extirpated, while others are known only from historical collections. National forest, state, and private lands all host significant populations. The species is primarily vulnerable to hydrologic changes and development.

Upward-lobed Moonwort (*Botrychium ascendens*) is found in various mesic sites from low to moderate elevations, including roadsides and other disturbed habitats. Upward-lobed Moonwort is documented in Montana, primarily from the northwest corner of the state. Almost all observations are on federally-managed lands. Most occurrences are small in size and occupy roadsides or other similarly open or disturbed habitats. As such, it is vulnerable to activities such as weed invasion, weed spraying, and road maintenance.

2.5.4.3 Trends

Persistent-sepal Yellowcress is apparently extirpated in the state (Heidel, B., 2001). Formal monitoring has not been conducted on other sensitive plant species. The MNHP has been developing threat assessments for species of concern in Montana. Assessments have not been completed for most

Bureau-sensitive species in the planning area. Species that have been assessed show threats to be low to moderate. Trend has been established for two species. Trend appears to be down for *Rorippa calycina*.

2.5.4.4 Forecast

Several sensitive plant populations are inside the boundaries of ACECs. Inside these areas, plants are generally adequately protected. Outside of these designated areas, especially in the Pryor Mountain foothills, there is high potential for adverse impacts from energy development and OHV use.

2.5.4.5 Key Features

Key features for special status plant species relate to habitats; distribution related to the species is listed in Table 2-22.

2.5.5 Invasive Plant Species

2.5.5.1 Indicators

Noxious weeds and invasive plants are not the same. Invasive plants include noxious weeds as well as other plants that are not native to the US. An invasive species is defined as “a species that is nonnative to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental health or harm to human health.” (2008-2012 *National Invasive Species Management Plan*, US National Invasive Species Council, 2008). These species make efficient use of local natural resources difficult and may interfere with management objectives for the site. An invasive plant attains a “noxious” status by legislation only. Noxious weeds are defined as “any exotic plant species established or that may be introduced in the state that may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses or that may harm native plant communities.” (*Montana Code Annotated*, 2013).

This designation usually places the burden to control, contain, or inhibit reproduction of a listed species occurring on any given parcel to that landowner. Noxious plant lists are established on the federal, state, and county levels. The State of Montana currently designates 32 noxious plants and 3 regulated plants which are divided into five categories based on the management priorities described in Table 2-23.

Table 2-23
Montana Noxious Weed List
(effective December 2013)

Priority Category	Species
PRIORITY 1A: These weeds are not present or have a very limited presence in Montana. Management criteria will require eradication, if detected, education, and prevention.	*Yellow starthistle (<i>Centaurea solstitialis</i>) *Dyer’s woad (<i>Isatis tinctoria</i>)
PRIORITY 1B: These weeds have limited presence in Montana. Management criteria will require eradication or containment and education.	*Knotweed complex * <i>Polygonum cuspidatum</i> <i>Polygonum sachalinense</i> <i>Polygonum bohemicum</i> <i>Fallopia japonica</i> <i>Fallopia sachalinensis</i> <i>Fallopia bohémica</i> * <i>Reynoutria japonica</i>

Priority Category	Species
	<i>Reynoutria sachalinensis</i> <i>Reynoutria bohemica</i> *Purple loosestrife (<i>Lythrum salicaria</i>) *Rush skeletonweed (<i>Chondrilla juncea</i>) *Scotch broom (<i>Cytisus scoparius</i>)
PRIORITY 2A: These weeds are common in isolated areas of Montana. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts.	*Tansy ragwort (<i>Senecio jacobaea</i> , <i>Jacobaea vulgaris</i>) *Meadow hawkweed complex <i>Hieracium caespitosum</i> <i>Hieracium praealtum</i> <i>Hieracium floridundum</i> <i>Pilosella caespitosa</i> *Orange hawkweed (<i>Hieracium aurantiacum</i> , <i>Pilosella aurantiaca</i>) *Tall buttercup (<i>Ranunculus acris</i>) *Perennial pepperweed (<i>Lepidium latifolium</i>) *Yellowflag iris (<i>Iris pseudacorus</i>) *Blueweed (<i>Echium vulgare</i>) *Hoary alyssum (<i>Berteroa incana</i>)
PRIORITY 2B: These weeds are abundant in Montana and widespread in many counties. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts.	*Canada thistle (<i>Cirsium arvense</i>) * Field bindweed (<i>Convolvulus arvensis</i>) *Leafy spurge (<i>Euphorbia esula</i>) *Whitetop (<i>Cardaria draba</i> , <i>Lepidium draba</i>) *Russian knapweed (<i>Acroptilon repens</i> , <i>Rhaponticum repens</i>) *Spotted knapweed (<i>Centaurea stoebe</i> , <i>Centaurea maculosa</i>) *Diffuse knapweed (<i>Centaurea diffusa</i>) *Dalmatian toadflax (<i>Linaria dalmatica</i>) *St. Johnswort (<i>Hypericum perforatum</i>) *Sulfur cinquefoil (<i>Potentilla recta</i>) *Common tansy (<i>Tanacetum vulgare</i>) *Oxeye daisy (<i>Leucanthemum vulgare</i>) *Houndstongue (<i>Cynoglossum officinale</i>) *Yellow toadflax (<i>Linaria vulgaris</i>) *Saltcedar (<i>Tamarix spp.</i>) *Flowering rush (<i>Butomus umbellatus</i>) *Eurasian watermilfoil (<i>Myriophyllum spicatum</i>) *Curlyleaf pondweed (<i>Potamogeton crispus</i>)
PRIORITY 3: Regulated Plants: (NOT MONTANA LISTED NOXIOUS WEEDS) These regulated plants have the potential to have significant negative impacts. The plant may not be intentionally spread or sold other than as a contaminant in agricultural products. The state recommends research, education, and prevention to minimize the spread of the regulated plant.	*Cheatgrass (<i>Bromus tectorum</i>) *Hydrilla (<i>Hydrilla verticillata</i>) *Russian olive (<i>Elaeagnus angustifolia</i>)

In addition, under the County Noxious Weed Control Act and Administrative Rules of Montana, each county is allowed to designate plant species as "noxious" within that county. Table 2-24 lists designated noxious weeds within the planning area by county:

Table 2-24
Montana Noxious Weeds by County

County	Designated Noxious Weeds
Pondera	common burdock (<i>Artium minus</i>), musk thistle (<i>Carduus nutans</i>), perennial sowthistle (<i>Sonchus arvensis</i>)
Teton	musk thistle (<i>Carduus nutans</i>)
Lewis and Clark	common mullein (<i>Verbascum thapsus</i>), black henbane (<i>Hyoscyamus niger</i>), common burdock (<i>Artium minus</i>)
Cascade	none
Chouteau	scentless chamomile (<i>Matricaria maritime va agrestis</i>), common burdock (<i>Artium minus</i>), poison hemlock (<i>Conium maculatum</i>), musk thistle (<i>Carduus nutans</i>), scotch thistle (<i>Onopordum acanthium</i>), baby's breath (<i>Gypsophila paniculata</i>)
Judith Basin	yellow mignonette (<i>Reseda lutea</i>)
Meagher	absinth wormwood (<i>Artemisia absinthium</i>), black henbane (<i>Hyoscyamus niger</i>), bladder campion (<i>Silene vulgaris</i>), bull thistle (<i>Cirsium vulgare</i>), common burdock (<i>Artium minus</i>), common mullein (<i>Verbascum thapsus</i>), field scabious (<i>Knautia arvensis</i>), musk thistle (<i>Carduus nutans</i>), perennial sowthistle (<i>Sonchus arvensis</i>), poison hemlock (<i>Conium maculatum</i>), scentless chamomile (<i>Matricaria maritime va agrestis</i>), scotch thistle (<i>Onopordum acanthium</i>), yellow mignonette (<i>Reseda lutea</i>)
Fergus	none
Petroleum	perennial sowthistle (<i>Sonchus arvensis</i>), poison hemlock (<i>Conium maculatum</i>), musk thistle (<i>Carduus nutans</i>), common burdock (<i>Artium minus</i>)

Introductions of invasive plants in Montana have occurred both intentionally, for some perceived value to man, and unintentionally, as contaminants of feed, seed, and ship ballast. Once established, these plants spread rapidly by both natural means (wind, water, and wildlife) and artificial means (roads, equipment, and the movement of contaminated feed and seed). Generally, these plants first invade disturbed soils and stressed plant communities. However, once established, many of these plants can invade healthy plant communities and significantly alter established systems.

The BLM also has an invasive plant list that identifies species of concern. The Federal Noxious Weed Act of 1974 (FNWA), which established an undesirable plant management program and an integrated management program to control undesirable plants, also established a list of invasive species. The list was compiled through cooperative efforts from all federal agencies and is maintained by the NRCS. Appendix E contains the BLM Invasive Plant List.

2.5.5.2 Current Condition

Distribution of Noxious and Invasive Plants

Noxious and invasive plant species are, for the most part, associated with areas experiencing natural or man-made disturbances such as waterways, roads, recreational destinations, over-utilized rangeland, pipelines, drilling pads, ROWs, and livestock/wildlife paths and congregation areas. In some locations within the planning area, noxious and invasive species have spread out from historically-disturbed areas to form a major portion of the vegetative community.

Nonnative Plant Species

Nonnative grass species are found throughout the Lewistown FO. Many of these species are considered naturalized at this time due to their historic presence. Crested wheatgrass was planted to protect farmed areas from erosion on lands that had been in private ownership and were reacquired by the federal government in the 1930s. These lands are commonly known as Bankhead-Jones or Land Utilization (LU) lands. Many of these crested wheatgrass stands remain monocultures of crested wheatgrass with very little vegetation diversity and little wildlife habitat value. As a result, crested wheatgrass has expanded beyond the planting and has become invasive in various wildlife habitats. Smooth brome, timothy, and Kentucky bluegrass have become established and continue to spread in many mountainous areas within the field office. Orchard grass is present in limited areas, typically next to private land hay operations. These grass species have significant forage value for livestock and wildlife but may not meet all of the standards for rangeland health. Conversion of these often monotypic stands of nonnative grass species is both labor and cost prohibitive and many times provide openings for other invasive species (cheatgrass) to become established. Cheatgrass (downy brome and Japanese brome) invasion has the potential to alter public land forage quality and seasonal availability. It also has the potential to increase fire frequency beyond the range of natural variation. This may, in turn, adversely impact wildlife habitat and water quality among other resources.

Drought has the potential to permanently alter rangeland vegetation composition to favor invasive plant species, including cheatgrass. Cheatgrass is prevalent in lower-elevation rangelands; however, it has increased its density in those areas and is now invading higher elevations.

Invasive Species Control

The LFO currently cooperates with the county weed districts in Fergus, Petroleum, Pondera, Meager, Cascade, and Teton Counties through assistance agreements for the management and control of noxious weeds on unallocated parcels of BLM land and to assist permittees/lessees in weed control efforts during resource project work. The majority of the LFO weed control efforts are through weed cooperative range improvement agreements with affected permittees/lessees, whereas the permittees/lessees enter into an approved weed management plan and the BLM provides resources for treatment and the permittee/lessee provides the labor for treatment. Herbicides approved for use are generally provided as part of the cooperative agreement and cooperators are required to turn in application records and follow treatment stipulations. Biological and mechanical controls are available under the cooperative agreements for areas where chemical control are not feasible based on terrain and resource concerns.

2.5.5.3 Trends

Since the mid-1980s, vegetation diversity has continued to be affected by wildfire, drought, grazing and commercial use operations, increased recreation use, and invasive species. In many areas, established weed populations continue to expand, and new species are appearing in areas surrounding the Lewistown RMP planning area. Some successes have occurred in containing the spread of large infestations of certain species in specific areas and eradication of small, scattered infestations. In 1996, the BLM estimated that, across the lands it administers nationwide, invasive plant species were spreading at about 2,300 acres per day or at a rate of about 14 percent annually for most species (BLM, 2006). This increase is expected to continue with the increased use of public and adjacent private lands. Federal, state, and county agencies as well as private landowners should continue working together to reduce the spread of noxious weeds. An increase in cooperation by all affected agencies and organizations is needed to reduce the number of infested acres within the LFO planning area. Funding

and budget reductions at the national and local levels are limiting factors in reaching the BLM's targets of reducing the number of acres infested.

Data collection and metadata standards are currently being developed for consistency and will be incorporated into the National Invasive Species Information Management System (NISIMS). This database is currently still in the development stage but has been designed to improve data collection, storage, analysis, and reduce discrepancies. This will help land managers understand current conditions and trends of various noxious weed communities. Future directions for management and prioritization can be established and will eventually help resolve land health concerns.

Mitigation measures will continue to be incorporated into grazing permits, NEPA documents, oil and gas stipulations, and other documents. Best management practices and evolving practices will be incorporated into weed management plans.

2.5.5.4 Forecast

The expansion of invasive species in the planning area will likely continue to increase at its present rate (14 percent). This rate may increase with the expansion of energy exploration and development and increasing outdoor recreation, specifically OHV use on public lands, and climate change.

Invasive species control efforts will continue to be the responsibility of affected permittees/lessees through weed cooperative range improvement agreements and the terms and conditions of their BLM grazing permit or lease.

Legislation may continue to be enacted in order to limit the introduction and spread of invasive species. Several new laws, executive orders, and initiatives have resulted in increasing weed awareness and the impacts associated with noxious/invasive species. Cooperative efforts among local, state, and federal entities will continue to be strengthened.

Treatment costs will continue to increase; therefore, control and containment along more easily accessible areas (e.g., roads, campgrounds, and facilities) should occur first. However, the spread of noxious weeds along trails and other less accessible areas will continue to increase and will be difficult to detect and monitor. Overall long-term costs, however, may be reduced if biological control methods become more widely used and become more successful.

Given the potential for the continued spread of invasive species, it is critical to incorporate mitigation measures and BMPs into conditions of approval for any surface-disturbing activities. Additional data and inventory are needed to adequately address resource uses and to identify areas susceptible to encroachment by invasive plants. Implementation of programs such as the NISIMS, a web-based geo-database currently being developed, will enhance those efforts. Again, budgets and funding are expected to limit the target accomplishments for specific programs.

2.5.4.5 Key Features

Key features for invasive plant species relate to habitats, distribution, and occurrence of those species listed in Table 2-24.

2.6 FISH AND WILDLIFE

2.6.1 Fish and Aquatic Communities

2.6.1.1 Indicators

The condition of fisheries habitat is fundamentally linked to the condition of the adjacent riparian habitat, including vegetation, water quality, and stream channel characteristics. Riparian vegetation moderates water temperatures, increases bank stability, supports invertebrates - a food source and critical food-web component, filters and entrains sediment, provides in-stream habitat for fish, and provides organic material for aquatic insects. Thus, indicators of the health of fish populations and their habitat are tied to riparian conditions. Other elements critical to aquatic habitat and suitable fish habitat, including riparian habitat, are water volume and the presence/absence of nonnative competitors or predators.

Other critical indicators for suitable aquatics and fish habitat include water quality, water quantity, and the presence/absence of nonnative competitors or predators. The BLM uses its surveys and those done by MDEQ and MFWP to assess the abundance, distribution, and health of fish populations and aquatic habitat within the planning area.

Data on most of the previous indicators is limited at best, and often completely absent. The few that are easily measurable include presence/absence of nonnatives, habitat gains or losses (in terms of acres or miles of streams), and number of T&E or SSS. General riparian condition can be linked to evaluations of PFC, as explained in the Riparian Vegetation Section 2.5.3. While PFC assessment protocols have been developed for both lotic and lentic systems, current data for the planning area is only for lotic systems. Also, as is stated in Section 2.5.3, lentic PFC assessments are meant for natural systems, and most of our fishing reservoirs are made or modified by humans. Additional measurable indicators are miles of fish-bearing streams, number of fisheries reservoirs, and angling days for reservoirs, if available.

2.6.1.2 Current Condition

The wide dispersal and scattered parcel distribution of BLM-administered lands in the planning area results in aquatic habitat for specific streams and rivers crossing land owned by different entities, making it difficult to describe specific habitat conditions relative to single land ownership. As a result, the current conditions of aquatic resources in the planning area are presented in terms of overall habitat conditions, stream types, and fish species distribution and diversity.

Aquatic habitats within the planning area are diverse and consist of prairie rivers and streams, Rocky Mountains streams, island mountains streams, springs, seeps, and lakes or reservoirs that provide year-round (perennial) or seasonal (intermittent) habitat for fish, aquatic invertebrate, amphibian, and reptile species. There are potentially 57 fish species in the planning area (Tables 2-25 and 2-26), of which 41 are native and 16 are nonnative.

With its diverse soils, topology, and elevations, the planning area supports both coldwater and warmwater fisheries. Within the planning area, each of these categories can be subdivided into three habitat types: intermittent lotic systems, perennial lotic systems, and lentic systems.

Coldwater fisheries are found at higher elevations or higher latitudes where temperatures remain low. In the planning area, coldwater fisheries are comprised of perennial mountain streams, including those in the Rocky Mountains and the island mountain ranges. Coldwater fisheries also include mountain lakes and ponds. However, although these coldwater lentic systems exist within the planning area, the

BLM does not manage any. Coldwater fish species include sculpins and various species of salmonids, such as trout and arctic grayling. Some of these are native to the habitat, while others are stocked for recreational fishing.

Warmwater fisheries make up the majority of BLM-managed fisheries within the planning area. These fisheries have warmer water temperatures that are not tolerable by coldwater fish species. In the planning area, warmwater fisheries consist of large perennial prairie streams and rivers, intermittent prairie streams with perennial pools, and stocked fishing reservoirs, lakes, and ponds.

Prairie lotic systems are slow moving through most of the year and often contain more sediment than their mountain counterparts. Large perennial rivers support many warmwater species, such as sturgeons, catfish, sauger, walleye, and paddlefish. Smaller perennial streams support populations of minnows, sunfish, and suckers, many of which are also found in the larger perennial rivers. Intermittent prairie streams are an important ecological niche. Prairie fish and other aquatic organisms move throughout these systems exploiting the perennial pool refuges in an intermittent stream system. These systems support several minnow and sucker species and occasionally catfish and others use these systems as well.

Prairie lentic fisheries in the planning area are most often found in the form of reservoirs. In addition to the prairie stream and river species, prairie reservoirs may be stocked with other game species such as largemouth bass, yellow perch, bluegill, black crappie, or possibly rainbow trout depending on water temperatures. Most of these stocked species are not native and have been introduced for recreational fishing. However, some native game species are also stocked in the planning area, such as sauger and channel catfish.

Table 2-25
Nongame Fish Species in the Planning Area

Common Name	Scientific Name	BLM Status	State Status^	Native to Planning Area	Habitat
Black Bullhead	<i>Ameiurus melas</i>				Lakes, ponds, reservoirs, stream backwaters
Freshwater Drum	<i>Aplodinotus grunniens</i>			✓	Large prairie rivers, lakes, streams
River Carpsucker	<i>Carpiodes carpio</i>			✓	Reservoirs, river backwaters, prairie streams
Longnose Sucker	<i>Catostomus catostomus</i>			✓	Larger streams, rivers, lakes
White Sucker	<i>Catostomus commersoni</i>			✓	Slow moving streams, rivers, lakes
Largescale Sucker*	<i>Catostomus macrocheilus</i>			✓	Mountain rivers, lakes
Mountain Sucker	<i>Catostomus platyrhynchus</i>			✓	Clear cold streams
Northern Redbelly Dace	<i>Chrosomus eos</i>		SOC	✓	Small prairie rivers

Common Name	Scientific Name	BLM Status	State Status^	Native to Planning Area	Habitat
Northern Redbelly x Finescale Dace	<i>Chrosomus eos x chrosomus neogaeus</i>	Sensitive	SOC	✓	Small prairie streams
Rocky Mountain Sculpin	<i>Cottus bondi</i>			✓	Mountain streams, rivers, lakes
Columbia Slimy Sculpin*	<i>Cottus cognatus</i>			✓	Mountain streams, rivers, lakes
Lake Chub	<i>Couesius plumbeus</i>			✓	Prairie streams
Brook Stickleback	<i>Culaea inconstans</i>		PSOC	✓	Small prairie rivers
Blue Sucker	<i>Cycleptus elongatus</i>		SOC	✓	Large prairie rivers
Common Carp	<i>Cyprinus carpio</i>				Reservoirs, lakes, river backwaters
Goldeye	<i>Hiodon alosoides</i>			✓	Large prairie rivers, reservoirs
Western Silvery Minnow	<i>Hybognathus argyritis</i>			✓	Prairie rivers, streams
Brassy Minnow	<i>Hybognathus hankinsoni</i>		PSOC	✓	Small prairie streams, rivers
Plains Minnow	<i>Hybognathus placitus</i>		PSOC	✓	Small and large prairie streams, rivers
Smallmouth Buffalo	<i>Ictiobus bubalus</i>			✓	Reservoirs, prairie rivers
Bigmouth Buffalo	<i>Ictiobus cyprinellus</i>			✓	Large prairie rivers, reservoirs
Green Sunfish	<i>Lepomis cyanellus</i>				Warmer lakes, ponds, reservoirs, streams
Bluegill	<i>Lepomis macrochirus</i>				Warmer lakes, ponds, reservoirs, stream backwaters
Sturgeon Chub	<i>Macrhybopsis gelida</i>	Sensitive	SOC	✓	Large prairie rivers
Sicklefin Chub	<i>Macrhybopsis meeki</i>		SOC	✓	Large prairie rivers
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>			✓	Large prairie rivers
Emerald Shiner	<i>Notropis atherinoides</i>			✓	Large prairie rivers, lakes, reservoirs
Spottail Shiner	<i>Notropis hudsonius</i>				Large prairie rivers, lakes, reservoirs
Sand Shiner	<i>Notropis stramineus</i>			✓	Prairie streams, lakes, reservoirs
Stonecat	<i>Noturus flavus</i>			✓	Prairie rivers, streams
Fathead Minnow	<i>Pimephales promelas</i>			✓	Prairie lakes, ponds, streams
Flathead Chub	<i>Platygobio gracilis</i>			✓	Prairie rivers, streams

Common Name	Scientific Name	BLM Status	State Status^	Native to Planning Area	Habitat
Longnose Dace	<i>Rhinichthys cataractae</i>			✓	Streams, rivers, lakes
Creek Chub	<i>Semotilus atromaculatus</i>		PSOC	✓	Small prairie rivers

Table 2-26
Game Species in the Planning Area

Common Name	Scientific Name	BLM Status	State Status^	Native to Planning Area	Habitat
Cisco	<i>Coregonus artedii</i>				Large reservoirs
Northern Pike	<i>Esox lucius</i>			✓	Reservoirs, lakes, stream pools, prairie streams
Channel Catfish	<i>Ictalurus punctatus</i>			✓	Large prairie rivers, lakes
Burbot	<i>Lota lota</i>		PSOC	✓	Large rivers, lakes
Smallmouth Bass	<i>Micropterus dolomieu</i>				Cool lakes, ponds, reservoirs, streams
Largemouth Bass	<i>Micropterus salmoides</i>				Warmer lakes, ponds, reservoirs, stream backwaters
Yellowstone Cutthroat Trout	<i>Oncorhynchus clarkii bouvieri</i>	Sensitive	SOC	✓**	Mountain streams, rivers, lakes
Westslope Cutthroat Trout	<i>Oncorhynchus clarkii lewisi</i>	Sensitive	SOC	✓	Mountain streams, rivers, lakes
Rainbow Trout	<i>Oncorhynchus mykiss</i>				Mountain streams, rivers, lakes
Kokanee Salmon	<i>Oncorhynchus nerka</i>				Cold lakes, reservoirs
Yellow Perch	<i>Perca flavescens</i>				Lakes, reservoirs, stream backwaters
Paddlefish	<i>Polyodon spathula</i>	Sensitive	SOC	✓	Large prairie rivers
White Crappie***	<i>Pomoxis annularis</i>				Large prairie rivers, lakes
Black Crappie	<i>Pomoxis nigromaculatus</i>				Lakes, reservoirs, stream backwaters
Mountain Whitefish	<i>Prosopium williamsoni</i>			✓	Mountain rivers
Brown Trout	<i>Salmo trutta</i>				Streams, rivers, lakes
Bull Trout+	<i>Salvelinus confluentus</i>	Threatened	SOC	✓	Mountain streams, rivers, lakes
Brook Trout	<i>Salvelinus fontinalis</i>				Mountain streams, rivers, lakes

Common Name	Scientific Name	BLM Status	State Status [^]	Native to Planning Area	Habitat
Sauger	<i>Sander canadensis</i>	Sensitive	SOC	✓	Large prairie rivers
Walleye	<i>Sander vitreus</i>				Lakes, reservoirs, prairie rivers
Pallid Sturgeon ⁺⁺	<i>Scaphirhynchus albus</i>	Endangered	SOC	✓	Large prairie rivers
Shovelnose Sturgeon ⁺⁺⁺	<i>Scaphirhynchus platyrhynchus</i>	Threatened		✓	Large prairie rivers
Arctic Grayling ⁺⁺⁺⁺	<i>Thymallus arcticus</i>	Candidate	SOC	✓	Mountain rivers, lakes

[^]State Status: SOC = Species of Concern; PSOC = Potential Species of Concern

+ Listed as Threatened under the Endangered Species Act (ESA). It is illegal to intentionally fish for Bull Trout unless done so with a specific permit and in specified waters. If Bull Trout are caught in other areas accidentally or without permit, they must be released immediately. Found west of the Continental Divide.

++ Listed as Endangered under the ESA. It is illegal to intentionally fish for Pallid Sturgeon. If caught accidentally, they must be released immediately.

+++ Listed as Threatened under Section 4(e) of ESA, Similarity of Appearance Cases. Commercial fishing of Shovelnose Sturgeon is illegal. Noncommercial fishing is permissible.

++++ The Upper Missouri River fluvial population is a Distinct Population Segment, listed as a candidate species under the ESA.

* May occur in streams west of the Continental Divide but has not yet been recorded in the planning area.

** Native populations within the planning area are limited to a small section of the Shields River drainage (a tributary to the Yellowstone River) in southern Meagher County.

*** May occur in tributaries to the Missouri River but has not yet been recorded in the planning area.

There are approximately 140 sport fishery reservoirs within the planning area. The BLM Lewistown FO manages, helps manage, or provides access to 13 of these reservoirs (Table 2-27). Most of these are small reservoirs stocked by MFWP with one or two species apiece, with the exception of Bynum Reservoir in Teton County. Most of the smaller reservoirs were stocked with and are managed for largemouth bass or rainbow trout, with the exception of Jakes, Wolf Coulee #1, and Whisker Reservoirs and Tunnel Lake. Wolf Coulee #1 was stocked with channel catfish in 1999. The MFWP has stocked Whisker Reservoir with largemouth bass almost every year since 2003. However, in recent years they have also attempted to establish a viable black crappie fishery (Montana Fisheries Information System [FISH], 2013).

Jakes Reservoir was originally stocked in 2003 and 2005 to help control a burgeoning yellow perch population. Sauger is a state Species of Concern (SOC) and a BLM Montana sensitive species, although Jakes is managed as a put-and-take fishery. Jakes Reservoir has very turbid water, in which sauger thrive. However, it does not provide appropriate habitat for sauger reproduction and, therefore, the population has to be supplemented over time. As a result, an additional stocking occurred in fall 2013. In 1996, the reservoir was stocked with northern pike but they did not survive as well.

Tunnel Lake is located on Bureau of Reclamation-managed land; however, BLM manages the land around the lake as well as the recreation for the lake itself. It is a 14.1-acre natural pothole lake stocked with arctic grayling and westslope cutthroat trout, both of which are BLM Montana sensitive species and Montana State SOC. However, these populations are managed for recreational fishing and not as supplements to native populations (MFISH, 2013).

Bynum is a 76-acre reservoir managed by MFWP as a fishing access site (FAS) through agreements and easements. It is currently stocked yearly with kokanee and rainbow trout, and occasionally with walleye. Past stockings in the reservoir of yellow perch have produced a viable, reproducing population with no further stocking necessary. Mountain whitefish occurs in the reservoir natively in small numbers (MFISH, 2013).

Table 2-27

Sport Fish Reservoirs Managed by or Accessed through BLM

Reservoir/Lake	Game Species Found
Box Elder/Vogel	Rainbow Trout Yellow Perch
Bubs	Largemouth Bass
Drag Creek	Largemouth Bass
Dry Blood	Largemouth Bass
Holland	Largemouth Bass
Jakes	Sauger Yellow Perch
Payola	Largemouth Bass Yellow Perch
South Fork Dry Blood	Largemouth Bass
Whisker	Largemouth Bass Black Crappie
Wolf Coulee #1	Channel Catfish
Yellow Water	Rainbow Trout
Tunnel Lake	Arctic Grayling Westslope Cutthroat Trout
Bynum Reservoir	Rainbow Trout Kokanee Salmon Mountain Whitefish (rare) Yellow Perch Walleye (rare)

Several of the reservoirs listed in Table 2-27 are smaller stock reservoirs constructed 40-70 years ago. The dams on these reservoirs are deteriorating quickly. These include Jakes, Bubs, Wolf Coulee #1, and Holland Reservoirs. The dam on Whisker Reservoir was constructed over 70 years ago, in 1939. Without repair these dams could fail soon, depending on weather events. The dam on Dry Blood Reservoir was repaired in 2009.

There are approximately 5,080 miles of fish-bearing streams in the planning area, of which approximately 120 are on BLM-administered lands. Most of the BLM-administered miles are prairie perennial streams and rivers. The exceptions are the 31 miles of mountain streams in the Rocky Mountains and the island mountain ranges. The Judith Mountains is the only island mountain range in the planning area managed primarily by the BLM that contains fish-bearing streams. These streams include Chicago Gulch, Collar Gulch, East Fork Fords Creek, and a small portion of Alpine Gulch, for a total of about 5.4 miles. Collar Gulch has a westslope cutthroat trout fishery, the easternmost documented native population of the fish. Collar Gulch ACEC was created in 1994 to protect this stream. More about this is discussed in the Sensitive Species Section below. Most other island

mountain ranges within the planning area are managed primarily by the FS. The BLM manages only small sections of streams within the other ranges. Within the Rocky Mountains, the BLM manages portions of the Sun River and the Teton River, as well as eight streams and the Pishkun Canal. Altogether, this represents about 18.6 miles of BLM-managed fish-bearing streams. The remaining BLM-managed streams are prairie perennial and intermittent streams. This includes portions of Sacagawea River (Crooked Creek), Box Elder Creek, Armells Creek, Arrow Creek, Judith River, Missouri River, and a small section of North Fork Musselshell River, as well as several other smaller creeks.

Approximately 35 percent of the BLM-managed fish-bearing streams have not been evaluated for PFC. Of those that have been evaluated, approximately 80 percent were ranked as PFC, 12 percent as FAR, and 8 percent as NF.

Threatened and Endangered (T&E) Species

Three fish species listed as T&E under the ESA are known to occur in the planning area. These species are:

- Pallid sturgeon – endangered
- Bull trout – threatened
- Shovelnose sturgeon – threatened due to similarity of appearance

The pallid sturgeon (*Scaphirhynchus albus*) was listed by the FWS as an endangered species in 1990. Its historic range included the Missouri River, the middle and lower reaches of the Mississippi River, and the lower reaches of the Yellowstone, Platte, and Kansas Rivers. The current distribution of the pallid sturgeon in Montana includes the Missouri River between Morony Dam and Fort Peck Reservoir, between Fort Peck Dam and the North Dakota border, and in the 112 kilometers of the Yellowstone River below the mouth of the Powder River. Female pallid sturgeons can take 15-20 years to reach sexual maturity and spawning is thought to occur at several year intervals. Pallid sturgeon larvae drift great distances downstream. It is thought that larvae may end up in one of the many reservoirs downstream which are not suitable rearing habitat. This, in combination with an obligatory spring upstream migration, is why populations are most affected by changes in water flow due to channeling and damming. Populations in Montana are comprised almost entirely of old, large fish. The Upper Missouri River population is thought to be comprised of only 50 adult fish, and a small number of young hatchery-reared individuals (American Fisheries Society [AFS] website, Pallid Sturgeon).

In the planning area, bull trout (*Salvelinus confluentus*) are only found in the Blackfoot and South Fork Flathead drainages. These occur in the Helena National Forest in Lewis and Clark County. These two drainages are part of the FWS designated critical habitat for the species (75 *Federal Register* 200). The bull trout does not tolerate high sediment levels in their spawning streams. Sediment can suffocate the developing embryos before they hatch. Factors contributing to declines of bull trout populations include habitat degradation and loss due to land and water management practices; isolation and fragmentation of populations by both structural (e.g., dams) and environmental (e.g., thermal or pollution) barriers; introduction of nonnative fishes resulting in competition, predation, and hybridization threats; historical eradication efforts; poisoning to remove nongame species; historical overharvest; and ongoing poaching and accidental harvest due to misidentification. Loss of the migratory component of bull trout life history diversity, where populations have become isolated in headwater lakes or stream reaches further threatens the species' recovery. Small, isolated populations face increased extirpation risks as a result of direct impacts of habitat change, random demographic and environmental variation, and genetic processes (AFS website, Bull Trout). The current populations in the planning area are found west of the Continental Divide entirely on FS land.

The shovelnose sturgeon (*Scaphirhynchus platyrhynchus*) was listed as threatened in 2010 under the Similarity of Appearance provisions of the ESA. Section 4(e) of the ESA authorizes the “Secretary of the Interior to treat a species as an endangered or threatened species even though it is not itself listed if: (a) the species so closely resembles in appearance a listed endangered or threatened species that law enforcement personnel would have substantial difficulty in attempting to differentiate between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to an endangered or threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the purpose of the Act” (75 *Federal Register* 169, p. 53601). It was determined that the shovelnose sturgeon met all of these criteria in its similarity with pallid sturgeon. This is further strengthened by the ability of the two species to hybridize and the inability to distinguish between processed pallid sturgeon roe and processed shovelnose sturgeon roe, even using genetic tests. The threatened status under Similarity of Appearance allows the FWS to prohibit take of shovelnose sturgeon, shovelnose-pallid sturgeon hybrids, and their roe when done so in association with commercial fishing activities. These restrictions only apply to certain areas where shovelnose and pallid sturgeons coexist. This includes the Missouri River within the planning area (75 *Federal Register* 169). Take of shovelnose sturgeon by private, noncommercial fishing is allowed.

Sensitive Species

There are six species of fish in the planning area with populations that are currently included in the BLM Montana Sensitive Fish Species List (Table 2-28). This includes four game species and two nongame species.

Table 2-28
Montana BLM Sensitive Fish Species

Common Name	Scientific Name	State Status [^]	MFWP Tier ⁺
Arctic Grayling (fluvial population)	<i>Thymallus arcticus</i>	SOC	1
Northern Redbelly X Finescale Dace	<i>Chrosomus eos x chrosomus neogaeus</i>	SOC	2
Paddlefish	<i>Polyodon spathula</i>	SOC	1
Sauger	<i>Sander canadensis</i>	SOC	1
Sturgeon Chub	<i>Macrhybopsis gelida</i>	SOC	1
Westslope Cutthroat Trout	<i>Oncorhynchus clarkii lewisi</i>	SOC	1

[^] **SOC** = Species of Concern

⁺ **MFWP Tier - Montana Fish, Wildlife and Parks Conservation Tier:**

Tier 1: Greatest conservation need. The MFWP has a clear obligation to use its resources to implement conservation actions that provide direct benefit to these species, communities, and focus areas.

Tier 2: Moderate conservation need. The MFWP could use its resources to implement conservation actions that provide direct benefit to these species, communities, and focus areas.

Tier 3: Lower conservation need. Although important to Montana’s wildlife diversity, these species, communities, and focus areas are either abundant and widespread or are believed to have adequate conservation already in place.

Tier 4: Species that are nonnative, incidental, or on the periphery of their range and are either expanding or very common in adjacent states.

The northern redbelly dace x finescale dace hybrid is rare and has an unusual form of genetic reproduction. While northern redbelly dace are common in Montana, finescale dace are not found at all. The hybrid dace are all female. The female typically breeds with male northern redbelly dace simply to stimulate egg development, but the male’s genetic material is not included in the egg so it is not

passed on. Therefore, the offspring are all genetic clones of the mother (MNHP website, 2013). This hybrid has been recorded in a 1.1-mile stretch of Pike Creek on BLM. However, it is possible it occurs throughout Pike Creek but was not recorded.

The sturgeon chub is a small chub found in large prairie river drainages. This chub lives and breeds in gravelly riffles and runs. Sedimentation in these gravelly areas as well as decreased flows due to damming of the large rivers has jeopardized their survival (MNHP website, 2013). Within the planning area, the sturgeon chub is only found in the Missouri River.

Westslope cutthroat trout are found in coldwater streams with gravel substrates and tend to thrive in streams with varied pool and riffle depths more than uniform stream depths. They face threats from habitat degradation and loss. They are also known to readily hybridize with other trout species, including the native Yellowstone cutthroat trout as well as nonnative rainbow trout that have been widely introduced for recreational purposes. Genetically pure populations of westslope cutthroat trout are mostly restricted to headwater streams. The greatest threat to these fish is nonnative fish species that will outcompete for resources and habitat as well as hybridize. Brook trout and brown trout are especially detrimental to cutthroat trout populations and will completely displace the native trout. Stocking of cutthroat trout is done in areas where nonnative fish populations can be isolated and removed (MNHP website, 2013). Westslope cutthroat trout populations in the planning area are found in eight different streams for a total of 8 miles on BLM lands. However, only 1.62 miles of BLM-managed streams are known to have isolated pure strains of westslope cutthroat trout - 1.37 miles of Collar Gulch and 0.25 mile of an unnamed tributary to Stickney Creek. The Collar Gulch ACEC was created in 1994 to help protect the Collar Gulch westslope cutthroat trout population, the easternmost population of westslope cutthroat trout known. The nearby Chicago Gulch, of which 1.64 miles are on BLM, is being considered as a site for introduction of pure westslope cutthroat trout. This stream is currently occupied by brook trout which would need to be removed.

Although widespread continentally, sauger distribution in Montana has decreased over 50 percent from its historical range. Sauger prefer turbid waters and have evolved advanced light-gathering retina which aid them in low-light environments. They spawn mostly over rocky substrates in larger tributaries to main rivers and will often migrate great distances to find the perfect spot. Major threats to sauger populations include channelization, water flow fluctuations and migration barriers such as dams (American Fisheries Society [AFS] website, Sauger). Native populations within the planning area are found in the Teton River, Missouri River, Musselshell River, Judith River, Warm Spring Creek, and a portion of Big Spring Creek. The BLM-managed miles, totaling almost 24 miles, are 5.23 miles of the Missouri River, 6.67 miles of the Judith River, 0.25 mile of the Teton River, and 11.82 miles of the Musselshell River.

Paddlefish populations are currently large enough to support a restricted recreational fishery, but population monitoring occurs regularly to ensure the fishery can be maintained. This fish is slow to mature and long-lived. It can reach up to 150 pounds and feeds primarily by filtering zooplankton from the water. With females maturing between 16 and 17 years and spawning only every 3 years, slow reproduction rates contribute to the sensitivity of this species. However, the greatest threat to the species is loss of spawning habitat. They require free-flowing rivers to spawn (AFS website, Paddlefish). Paddlefish are found in low densities throughout the Missouri River system. Within the planning area they have been recorded in the Missouri River adjacent to three small BLM parcels totaling less than one-half mile. However, given the mobility and long lifespan of this species, all BLM lands along the Missouri River are considered habitat for the paddlefish.

The Upper Missouri River Distinct Population Segment (DPS) of arctic grayling was originally put on the candidate species list in 1994. However, in 2007, it was determined that this segment of the population was not a DPS, so it was removed from the list. The status of the species was reviewed again in 2009-2010, and on September 8, 2010, it was published in the *Federal Register* that the fluvial population of the Upper Missouri River did warrant DPS status and that population was listed as a candidate species. While arctic grayling has been introduced into several lakes and streams in the planning area, the DPS listed is in the Big Hole River in southwestern Montana, which is not in the planning area (75 *Federal Register* 173). This population is the only one considered on the BLM Sensitive Species List. However, fluvial arctic grayling were introduced into the Sun River system as decreed in a Candidate Conservation Agreement. The BLM manages small portions of the Sun River below Diversion Dam.

2.6.1.3 Trends

An increased demand on water for irrigation due to increasing population and drought conditions has led to dewatering throughout the planning area. Dewatering of fish-bearing streams and rivers has been a growing concern. Dewatering leads to a myriad of problems, including extirpation of aquatic species, declines in water quality, destitution of riparian communities, and more frequent and intense flooding. In the past, river ecology focused on water quality and “minimum flow” requirements. Today river ecology is trending toward a more holistic approach, using the natural flow regime (Poff, et al., 1997). This approach attempts to mimic the normal flows associated with riverine systems, from daily fluctuations to seasonal changes to multiple-year events. It involves the collaboration of multiple land management agencies and power companies to release water pulses from dams and to prevent further depletion of the stream flows from diversions. Section 2.4.2, Surface Water Resources, discussed new surface water right trends. It is noted that the trend of appropriations of surface water is more than likely downward. This downward trend is due to the fact that most easily developable water has been appropriated already. See Section 2.4.2 for a more detailed explanation. However, even though more appropriations are unlikely, the current water rights combined with drought conditions continue to contribute to less water in streams. Trends related to fisheries can also be closely associated with trends in the health of riparian-wetland vegetative communities. Please refer to Section 2.5.3.4 for a detailed discussion of trends in the health and management of riparian-wetland vegetative communities. Appendix C displays a comprehensive list of the functional condition of lotic riparian systems within the planning area.

While many native fish populations are declining, special status species are declining more than others. Many of these have similar issues contributing to their decline, including damming of rivers and competition with nonnatives. The most dire of these species in the planning area is the pallid sturgeon, listed as endangered by the ESA. It is now one of the rarest fishes in North America. Approximately 50 wild adult pallid sturgeons are estimated to exist in the Missouri River upstream of Fort Peck Reservoir. The most significant driver for pallid sturgeon decline is habitat alteration from dams. Also contributing is their complex life history. It takes over 15 years for female pallid sturgeons to reach mature reproductive age. They spawn only every few years and the larvae drift long distances downstream before they can swim with the current. Without a free-flowing river to migrate far enough upstream for proper spawning, it is thought that the larvae end up being deposited in reservoirs where they do not survive (FWS, 2013). This is supported by the fact that no wild-born larvae were found in the Missouri for over 25 years.

In 2011, a historic flood on the Missouri River altered flows and temperatures. Normal water released from dams comes from the intake, usually located deep in reservoirs. This water is cold. Pallids require warmer water temperatures to trigger spawning. In 2011, to deal with extremely high flows, water was released not only through intakes, but over spillways. Therefore the water was warmer than normal

releases. That was the first time in years that a confirmed wild-born larva was found, just below Fort Peck Dam. However, the larva was discovered shortly after hatch and it is unknown whether the larva would have survived after drifting downstream. In that year 40 percent of radio-tagged pallid sturgeons moved upstream to the Fort Peck Dam and stayed through the spawning season, compared to the usual 5 percent. This migration occurred during a flow rate of 25,000 to 30,000 cubic feet per second (cfs), far below the max flows that year of over 100,000 cfs. This gives biologists the hope that a controlled water release from the upper water level of reservoirs in the spring might encourage a similar migration, even though this would be far less than the level necessary to cause the amount of flooding witnessed in 2011 (Lonner, *In Murky Waters*). Spring water pulses were released from Tiber Dam on the Marias River in 1995, 1997, and 2002. While there is no direct evidence that this benefitted pallid sturgeon, it has benefitted the sturgeon chub. This sensitive species now has an established population in the lower Marias where they weren't documented before 2002. Sturgeon chub are an important food source for pallid sturgeons (FWS, 2013).

There are several native salmonid species in the planning area that are declining. This includes the federally listed threatened bull trout as well as three sensitive species: the Yellowstone cutthroat trout, the westslope cutthroat trout, and arctic grayling. All of these species are native to cold mountain streams and lakes. As in pallid sturgeons, dams and water diversions are one driver of this decline. Impoundments on streams affect these salmonids' migration patterns, threaten recruitment, create genetic isolation, and increase water temperatures in cold mountain streams. The most significant driver for the decline of these salmonids is the introduction and spread of nonnative fishes, in particular the nonnative salmonids that compete directly for food and habitat. The nonnative brook trout and rainbow trout will also hybridize with several of these species. Also contributing to the decline of bull trout, in particular, is the illegal harvest of the species and the accidental harvest because of misidentification (FWS, 2002).

The westslope cutthroat trout now occupies only 19-27 percent of its historic range in Montana. With hybridization, it is estimated that pure westslope cutthroat trout only occur in 2-4 percent of their entire historic range (AFS website, Westslope Cutthroat Trout). Yellowstone cutthroat trout occupy only 43 percent of their historic stream habitat range-wide, and only 31 percent of their former stream habitat in Montana (May, 2007). Fluvial arctic grayling currently occupy only 4-5 percent of their former range in the Missouri River system. Within the planning area, this historic range included the Sun River, the Smith River, and the main stem Missouri River (75 *Federal Register* 173).

2.6.1.4 Forecast

Current management in riparian areas, including livestock grazing and restriction of surface-disturbing activities, continues to improve those areas. Through NEPA analysis of proposed actions and land health assessments, future problems should be identified and prevented/corrected. Water depletions through diversion or drought are expected to continue to increase and could affect water quality and availability for fish, resulting in decreased population densities. This, in turn, could reduce recreational fishing opportunities. Although habitat improvement could help offset this decline, opportunities are limited on BLM-managed lands.

Both climate change and short-term variation in weather patterns may contribute to changes in stream systems such as flow, temperature, and turbidity. Aquatic systems are never static, but are constantly changing in response to environmental variations such as summer heat and winter ice, droughts and floods, and longer-term climatic changes. Lotic systems depend on high water events to create fish habitat such as scour pools for winter or low water habitat, large woody debris and undercut banks to create overhead cover, and the cleaning of sediment out of spawning gravels. Living in a dynamic

environment, fish tolerate and even need such periodic disruptions to their stream habitats. But such disruptions, if they are too extreme or occur too frequently, can adversely affect fish habitat and can permanently reduce or eliminate fish populations from some stream reaches or even entire stream systems. Many climate change predictions include increased duration and frequency of droughts, an increase in extreme precipitation events, and increased surface water temperatures. Increased temperatures can contribute to a decline in fish populations, especially in coldwater fisheries.

Within the planning area, many of the lotic fish populations survive in isolated systems. Such systems have limited or no ability to be repopulated from other systems, if the present population is extirpated. These populations have survived many periodic droughts, but if climate change in the planning area results in droughts that are longer and more severe than historic patterns, fish populations and species numbers may be adversely impacted. Climate change and drought effects on water resources are also discussed in Sections 2.4.2, Surface Water Resources, and 2.5.3, Riparian-Wetland Communities.

Montana's pallid sturgeon populations contain few adults and are comprised of older fish. Without changes to current management, wild-born pallid sturgeon populations in Montana may be extinct by 2018 (Pallid Sturgeon, MFWP website, 2013). Efforts are being made to reverse this trend for pallid sturgeons and other migrating species. Agencies are considering several options for mimicking natural flows and increasing the potential of fish migration. One option is creating bypass channels that will allow the fish to swim around dams while still maintaining the water level necessary for the function of the dam. This is being considered around the Intake Diversion Dam on the lower Yellowstone River. While this isn't in the planning area, if it succeeds, similar projects could be pursued elsewhere. Installing screens at water diversions such as canals to prevent fish entrainment is also being used to help native fisheries (Lonner, *In Murky Waters*). This occurred just recently at the Intake Diversion Dam, but success hasn't been determined yet. Although the success of these and other projects has yet to be determined, fish biologists are working to figure out solutions to these and other current problems.

There is always the risk, due to the loss of suitable fisheries, that additional fish species may be added to the ESA T&E species list or the BLM Sensitive Species List.

2.6.1.5 Key Features

Areas where westslope cutthroat trout occur should be prioritized. This is the only sensitive native trout species that has a presence on BLM-managed surface lands. The BLM parcels along or near the Sun River should be managed to benefit the introduced conservation population of fluvial arctic grayling. Any efforts to enhance and restore riparian communities are encouraged. Examine all future water diversions, including livestock tanks, and manage to ensure adequate water supply to support fisheries. The BLM will continue to manage riparian areas for PFC.

Enhance reservoir fisheries habitat when possible. Concentrate on repair and maintenance of dams on fisheries reservoirs. Consider ways to enhance desired sport fisheries, especially those in short supply in the planning area, such as black crappie fisheries.

2.6.2 Aquatic Nuisance Species

Numerous species of aquatic and terrestrial invertebrates occur across the field office. This group, which has been largely unstudied, forms the base of the food chain for fish, birds, mammals, reptiles, and amphibians. Zebra mussels are native to the Black Sea and Caspian Sea, though they have been moved to numerous locations in Europe and North America. Zebra and quagga smother aquatic organisms such as crayfish and native clams and outcompete native species for food and aquatic

habitat. They damage equipment by attaching to boat motors or hard surfaces, and they also clog water treatment facilities.

2.6.2.1 Indicators

Montana Fish, Wildlife and Parks (MFWP) Aquatic Nuisance Species (ANS) Rankings:

Priority Class 1 - These species are not known to be present in Montana, but have a high potential to invade and there are limited or no known management strategies for these species. Appropriate action for this class includes prevention of introductions and eradication of pioneering populations.

Priority Class 2 - These species are present and established in Montana and have the potential to spread further and there are limited or no known management strategies for these species. These species can be managed through actions that involve mitigation of impact, control of population size, and prevention of dispersal to other water bodies.

Priority Class 3 - These species are not known to be established in Montana and have a high potential for invasion and appropriate management techniques are available. Appropriate management for this class includes prevention of introductions and eradication of pioneering populations.

Priority Class 4 - These species are present and have the potential to spread in Montana but there are management strategies available for these species. These species can be managed through actions that involve mitigation of impact, control of population size, and prevention of dispersal to other water bodies.

There is no additional information on the current condition, trends, forecasts, and key features for aquatic nuisance species.

2.6.3 Wildlife and Habitat

Wildlife resources include game species (big game, upland game birds, waterfowl, webless migratory birds, and furbearers) and nongame species (raptors, reptiles, amphibians, nongame mammals, and migratory birds), as well as their habitat. The BLM is responsible for managing wildlife habitats, whereas management of wildlife species is overseen by state and federal wildlife management agencies. The MFWP manages resident wildlife populations and migratory game birds in two regions (most of MFWP Region 4 and a small northern portion of MFWP Region 5) which encompass the RMP area. The FWS provide regulatory oversight for all species that are listed or proposed for listing under the ESA (see Special Status Species). The FWS also administers the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act which protects migratory bird species whether they are hunted (e.g., waterfowl) or not (e.g., songbirds).

2.6.3.1 Indicators

Wildlife species indicators reflect population levels, distribution, and quantity and quality of preferred and suitable habitat and the prey needed to support them. This includes critical breeding, wintering grounds, and corridors needed to support migrations and a healthy genetic pool needed for adaptability to future circumstances and conditions. Indicators are detected through allotment evaluations, stream and vegetation monitoring, population surveys, the MNHP database, field observations, and FWS data.

Specific habitat indicators include, but are not limited to: vegetation type acres, mapped or modeled species habitat acres, security cover (habitat patches with sufficient size and vegetation or topography cover located away from frequent disturbances) acres, and road density.

2.6.3.2 Current Condition

The BLM-administered lands contain a variety of habitats that possess the biological and physical attributes important in the life cycles of many wildlife species. The diversity of habitat provides important areas for breeding, birthing, foraging, wintering, and migration. As with all ecological systems, the Northern Great Plains and Rocky Mountain Front wildlife are strongly interconnected with the vegetation present in the planning area, and characterized by wildlife habitats that vary in vegetation types, water resources, geology, topography, and climate. Elevations in the planning area range from 2,500 feet to 8,600 feet, which support habitats including coniferous forests, juniper woodlands, aspen stands, mountain shrub, breaks, badlands, sagebrush-steppe shrublands, grasslands, agriculture and wetland/riparian areas.

Wildlife species are typically described by their vertebrate class: mammals, birds, reptiles, and amphibians. Table 2-29 shows the number of recorded species by class and potential that could occur in the planning area, based on habitats and species distribution. Mammals and birds are further described as either game or nongame species. Emphasis for this section is placed on species and habitats that are of particular interest for hunting and photography/viewing. The Special Status Species Section focuses on species that is limited in number or distribution, occur on BLM lands, or are influenced by BLM management activities, and that serve as indicators of ecosystem health or management activities.

Table 2-29
Number of Recorded and Potential Species within the Lewistown Planning Area

	Potential	Recorded
Amphibians	10	7
Reptiles	13	7
Birds	304	147
Mammals	90	43
Fish	56	50
Insects	263	36
Mollusks	23	0

Table 2-30
Game Species within the Lewistown Planning Area

Game Species	General Habitat Acres		General/Winter Habitat Acres		Total Habitat Acres	
	BLM	All Ownership	BLM	All Ownership	BLM	All Ownership
Antelope	365,057	8,463,001	1,440	284,718	366,497	8,747,719
Bighorn Sheep	16,302	616,146	29,045	265,079	45,347	881,225
Black Bear	133,061	8,632,467	0	0	133,061	8,632,467
Dusky (Blue) Grouse	56,685	3,524,617	0	0	56,685	3,524,617
Elk	96,904	2,886,094	363,243	3,288,157	460,147	6,174,251
Gray (Hungarian) Partridge	612,376	9,715,988	0	0	612,376	9,715,988
Gray Wolf	69,258	4,643,173	0	0	69,258	4,643,173

Game Species	General Habitat Acres		General/Winter Habitat Acres		Total Habitat Acres	
	BLM	All Ownership	BLM	All Ownership	BLM	All Ownership
Moose	71,889	3,327,240	0	6,283	71,889	3,333,523
Mountain Goat	10,856	540,931	5,073	347,873	15,929	888,804
Mountain Lion	313,403	7,633,536	0	0	313,403	7,633,536
Mule Deer	46,663	4,529,312	607,751	8,213,739	654,414	12,743,051
Pheasant	55,034	4,626,101	0	0	55,034	4,626,101
Ruffed Grouse	65,273	3,359,030	0	0	65,273	3,359,030
Sharp-tailed Grouse	586,566	8,978,418	0	0	586,566	8,978,418
Spruce (Franklin's) Grouse	20,078	1,399,971	0	0	20,078	1,399,971
White-tailed Deer	306,975	11,110,612	22,627	209,275	329,602	11,319,887
Wild Turkey*	196,807	1,018,071	0	379,993	271,339	1,398,064

Big Game

Big game species include elk, mule deer, white-tailed deer, pronghorn, moose, bighorn sheep, mountain goat, black bear, wolf and mountain lion. The vast majority of the planning area is big game habitat, and includes some seasonal ranges that are of extreme importance to ungulate survival. The BLM's management for multiple uses occurring on public lands, including wildlife habitat management, has significant influence upon wildlife well-being. The BLM routinely consults and coordinates with the MFWP in issues concerning habitat quality and carrying capacity and distribution for big game.

The MFWP's big game herd management objectives are based on herd units. Boundaries of the herd unit areas are set up to encompass all of the seasonal ranges and habitats or special life function areas (calving and lambing areas, etc.) utilized by a more or less discreet population herd. The intention is to incorporate the herd unit within its biological boundaries. Since there will always be some interchange of animals between adjacent populations and use patterns by portions of populations change over time, these boundaries are not necessarily perfect or permanent, but represent the best data presently available. The RMP planning area is almost entirely within MFWP Region 4. Tables 2-31, 2-32, and 2-33 show statewide and Region 4 estimates for elk, deer, and antelope respectively.

Table 2-31
Region 4 and Statewide Elk Population Estimates from 2008-2013

Species	Year	MFWP Estimate		R4 Hunting District Objectives		
		Region 4	Statewide	Over	At	Under
Elk	2013	35,869	148,648	20	7	2
	2012	31,706	141,078	20	8	1
	2011	30,713	140,613	16	5	3
	2010	27,189	117,880	15	19	2
	2008	25,895	136,032	NA	NA	NA

Table 2-32**Region 4 and Statewide Deer Population Estimates from 2008-2013**

Species	Year	Region 4		Statewide	
		Year Estimate	10 Year Avg.	Year Estimate	10 Year Avg.
Mule Deer	2013	51,394	69,090	218,883	273,718
	2012	45,250	71,805	229,782	278,014
	2011	38,560	73,946	203,905	286,433
	2008	47,170	72,688	204,924	287,920
White-tailed Deer	2013	29,050	31,468	193,049	213,175
	2012	29,680	32,547	177,354	216,321
	2011	32,300	32,828	202,122	220,121

Table 2-33**Region 4 and Statewide Antelope Population Estimates from 2008-2013**

Year	Region 4 Estimate	Statewide Estimate
2013	13,212	110,225
2012	14,146	100,631
2011	22,279	90,389

Game populations are managed by MFWP based on habitat condition and animal quantity or quality being produced. Population levels are linked to a variety of factors including access, vegetation quality and quantity, habitat fragmentation, migration corridor quality, type and degree of disturbance, and weather patterns such as prolonged drought. Big game populations are managed largely by hunting. Each herd unit may incorporate one to several hunt areas, depending upon the need for different harvest management strategies on different portions of the population. Additional information on herd populations, including trend data, is available from [MFWP online](#).

Management challenges for big game species include access, poor habitat conditions, fire management, drought, increased development and urbanization, habitat fragmentation, open road density, OHV use, disease, and the impacts of grazing on the frequency, quality, and composition of key forage species. The LFO partners with MFWP to administer the Chain Buttes and East Indian Butte [Block Management Areas \(BMAs\)](#) to improve access and hunting opportunities. The BLM and the MFWP continually coordinate and evaluate actions affecting herd units and habitat conditions to determine appropriate management direction.

Elk, mule deer, white-tailed deer, and pronghorn are common year round throughout the planning area, whereas moose and bighorn sheep are found in limited areas. Moose are found primarily in the riparian habitats along the Rocky Mountain Front. Bighorn sheep are predominantly located north of Winifred adjacent to the UMRBNM and along the Rocky Mountain Front. Mountain goats are located along the Rocky Mountain Front and Square Butte. White-tailed deer populations are expanding, but are still fairly limited to habitats along water courses near agricultural fields. More information including trend data is available from the MFWP website.

Habitats

Table 2-16 above in the Vegetation Section shows the grouped habitats by ownership within the planning area. The BLM surface ownership is 5.1 percent in the 12.9 million-acre project area. Agriculture is the dominant habitat type in the project area, totaling nearly 2.8 million acres (22 percent of the project area), with 92.9 percent occurring on private lands. Sagebrush shrubland and steppe is the dominant BLM vegetative type in the RMP area, comprising almost 42 percent of BLM surface ownership. Most of the sagebrush habitats occur in Petroleum and eastern Fergus Counties, which are also the areas with the largest blocks of BLM ownership. Ponderosa pine woodlands, grasslands, and badlands are other sizeable habitats totaling over 30 percent of the BLM ownership within the Lewistown FO.

Sagebrush provides winter range for big game and is essential for Greater Sage-grouse and other sagebrush-associated species such as the Brewer's sparrow and sage thrasher. Many other species utilize the sagebrush vegetative type, including a number of reptiles and invertebrates.

Compared to grasslands and sagebrush, forest and woodlands are less abundant in the RMP area; however, they add structural and biological diversity to the landscape. Forests are mainly dry-mesic montane mixed conifer forests of ponderosa pine, Douglas fir, and lodgepole pine with scattered birch and aspen groves. Forest and woodlands provide summer cover for big game and are prime habitats for dusky grouse and northern goshawks. Veery and ovenbirds are also species of interest. Other shrubs such as greasewood, chokecherry, and wild rose provide important forage, hiding, or thermal cover for a variety of wildlife, including deer and elk, sharp-tailed grouse, migratory birds, and small mammals.

Riparian and wetland vegetative types occur on less than 1 percent of the public lands within the RMP area; however, it is estimated that 70 to 85 percent of the wildlife in the RMP area use riparian habitats for at least a portion of their life cycles. Many amphibian species, as well as muskrat, beaver, mink, and various waterbirds and waterfowl, occur in riparian or wetland areas only. Songbirds are attracted to the structural and vegetative diversity for both nesting and migrating habitat. The Montana Partners in Flight have categorized riparian habitats as a top priority for conservation of neotropical migrant birds (birds that breed in the United States and Canada and winter in Latin America) (Montana Partners in Flight, 2000). The various lakes, reservoirs, streams, and associated riparian vegetation provide food, water, cover, and travel corridors for a variety of wildlife species.

Important Areas Recognized by other Wildlife Agencies/Organizations

Terrestrial Community Types and Conservation Actions from the *Draft State Wildlife Action Plan (Draft SWAP)*, p. 57

Twelve of the 21 unique terrestrial community types across the 7 ecoregions, were identified as Tier I. This resulted in 51 geographical areas for which conservation actions needed to be identified. Please note that community types may be found in ecoregions other than what is depicted on the maps. Only locations where the community types are considered Tier I are displayed and addressed.

Within the planning area, nine of the Tier I terrestrial community types occur on BLM lands. These include:

- Floodplain and Riparian
- Open Water
- Wetlands
- Alpine Grassland and Shrubland and Alpine Sparse or Barren (ONAs)

- Conifer-dominated Forest and Woodland (xeric-mesic)*
- Deciduous-dominated Forest and Woodland
- Lowland/Prairie Grassland*
- Montane Grassland
- Sagebrush Steppe and Sagebrush-Dominated Shrubland*

With each of the Tier I communities is a list of associated species of greatest conservation need (SGCN) and a table identifying current impacts, future threats, and conservation actions.

There are 127 Species of Greatest Conservation Need (SGCN) (Appendix F), but conservation actions only were developed for 47 as they had a State Rank of S1 or S2. The latter includes 5 amphibians, 14 birds, 16 fish, 8 mammals, 1 mussel, and 3 reptiles.

Rocky Mountain Front Conservation Area (FWS)

The [Rocky Mountain Front Conservation Area](#) is along the eastern edge of the Continental Divide in northwestern Montana. The conservation area is part of a landscape conservation strategy to protect a unique, highly diverse, and mostly unfragmented ecosystem. This project helps protect The Front from drastic change caused by widespread, unplanned, residential or commercial development.

- Established in 2005 and expanded in 2010.
- Comprises a 918,000-acre area, within which the FWS will acquire conservation easements on up to 295,000 acres of private land.
- Centered 65 miles northwest of Great Falls, Montana, in Lewis and Clark, Pondera, and Teton Counties.

The FWS uses conservation easements to help maintain large, unfragmented blocks of habitat between existing protected areas such as state wildlife areas and The Nature Conservancy's Pine Butte Swamp Preserve.

Easement contracts specify perpetual protection of habitat for trust species and limits on residential, industrial, and commercial development. Contracts prohibit alteration of the natural topography, conversion of native grassland to cropland, drainage of wetland, and establishment of game farms.

Easement land remains in private ownership; therefore, property taxes and invasive plant control remain the responsibility of the landowner who also retains control of public access to the land. Contracts do not restrict grazing on easement land.

Montana Audubon Important Bird Areas (IBAs)

The IBA Program is a [global initiative](#) to identify, monitor, and protect a network of sites critical for the conservation of birds. Since 1995, the National Audubon Society has taken the lead in implementing the [IBA Program in the US](#), and Montana Audubon administers the program in Montana. The IBAs within the LFO planning area include:

- Musselshell Sage-steppe site (Global IBA designation—contains BLM lands)
- Freezeout Lake site (State IBA entirely owned by State of Montana)
- Arod Lakes site (FWS, state and private—no BLM lands)
- Benton Lake National Wildlife site (FWS—no BLM lands)
- Charles M. Russell and UL Bend NWRs site (FWS—no BLM lands)

2.6.3.3 Trends

The elk population has increased by 10,000 animals (40 percent) in Region 4 between 2008 and 2013. Most hunting districts are over objective in the region. Access is a primary issue for managing elk, especially in the Snowy Mountains. While elk populations have increased, white-tailed deer and mule deer have remained well below historical averages.

2.6.3.4 Forecast

Access will continue to be an issue for managing game populations and is likely to increase as more limitations are placed on private land. The MFWP Block Management Program will continue to play a vital role in managing big game populations.

Trends and forecasts for wildlife and habitat relate directly to the vegetative conditions. Please refer to Section 2.5 for detailed discussions regarding trends and forecasts for vegetative resources.

Projected changes associated with climate change described in Section 3.0 of the Climate Change SIR (BLM, 2010) include:

- Temperature increases in Montana are predicted to be between 3° to 5°F at the mid-21st century. As the mean temperature rises, more heat waves are predicted to occur.
- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Wind power production potential is predicted to decline in Montana based on modeling focused on the Great Falls area.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures which could also lead to more fishing closures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase in median annual area burned by wildland fires in Montana based on a 1°C global average temperature increase to be 241 to 515 percent.
- According to the Montana, North Dakota, and South Dakota Climate Change SIR (BLM, 2010), *“Fires, insect pests, disease pathogens, and invasive weed species have increased, and these trends are likely to continue. Changes in the timing of precipitation and earlier runoff increase fire risks.”* Furthermore, *“Hot, dry weather, which is predicted to occur more frequently throughout the United States, is directly related to wildfires.”*

While long-range regional changes will occur within the planning area, it is impossible to precisely predict the magnitude, location, and timing of local impacts.

2.6.3.5 Key Features

- Elk population and access: Isolated, inaccessible public land and private land where hunting is limited or not allowed has resulted in high elk numbers. This is a primary factor to many MFWP hunting districts exceeding population objectives.

- Fire suppression and agricultural conversion are conservation threats to many habitats and wildlife species. Need to identify desired habitats and seral stages, along with processes that influence these (wildfire, flooding, etc.).
- Large intact landscapes crossing multiple landowners occur in many portions of the planning area. Consider ways to maintain these habitats including: ROW requests—when/where should they be considered? Where should avoidance and exclusion areas for ROWs occur?
- Facilitate conservation measures that address concerns identified for SGCN and Community Types Greatest Conservation Need (CTGCN).
- Work with partners to provide large, connected habitat patches across the state that are resilient and adaptable to existing impacts and future threats.
- Develop management plans for CTGCN to benefit SGCN.

2.6.4 Special Status Species (Wildlife)

2.6.4.1 Indicators

Special status species indicators reflect population levels, distribution, and quantity and quality of preferred and suitable habitat and the prey needed to support them. This includes breeding grounds, wintering grounds, and corridors needed to support migrations and a healthy genetic pool needed for adaptability to future circumstances and conditions. Indicators are detected through allotment evaluations, stream and vegetation monitoring, population surveys, the Montana Natural Heritage Program (MNHP) database, field observations, and FWS data.

Specific indicators include, but are not limited to: vegetation type acres, mapped or modeled species habitat acres, security area acres, and road density.

2.6.4.2 Current Condition

Special status species are plants and animals that require particular management attention due to population or habitat concerns. Special status species management addressed in BLM Manual 6840 includes:

- [Federally-listed T&E Species](#)
- Federally-designated Critical Habitat
- Federally-proposed Species and Proposed Critical Habitats
- Federal Candidate Species
- Delisted species in the 5 years following delisting
- [Montana BLM Sensitive Species](#)

The BLM accomplishes its T&E species management through coordination with FWS and MFWP. The BLM initiates Section 7 consultation with the USFWS before approving or implementing any action that may affect listed species or designated critical habitat. Streamlined consultation procedures detailed in the July 27, 1999, Memorandum of Agreement (MOA) and subsequent implementation guidance for Section 7 consultations are utilized to provide collaborative opportunities in the consultation process. The BLM has entered into an MOA with the FWS to improve the efficiency and effectiveness of RMP-level Section 7 consultation processes under the ESA. Through this MOA, BLM agrees to promote the conservation of candidate, proposed, and listed species and to informally and formally consult on listed and proposed species and designated and proposed critical habitat during planning to protect and improve the condition of species and their habitats to a point where their special status is no longer necessary.

Federally-listed species can have critical habitat identified as crucial to species viability. For those species that are listed and have not had critical habitat designations identified for them, BLM cooperates with the FWS to determine and manage habitats of importance. Protective measures for migratory birds are provided in accordance with the Migratory Bird Treaty Act of 1918 and Bald Eagle Protection Act of 1940, later amended in 1962 to become the Bald and Golden Eagle Protection Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act (1934).

Bureau sensitive species are those species designated by the State Director, usually in cooperation with the state agency responsible for managing the species and MNHP. Species designated as Bureau sensitive must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

- There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
- The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

The SSS in the RMP decision area are listed in Appendix F. The SSS currently expected in project area include: 33 birds, 11 mammals, 4 reptiles, and 4 amphibians. The SSS list is updated at a minimum of every 5 years, according to the 6840 manual.

T&E Species

Table 2-34 shows those FWS threatened, endangered, proposed, and candidate wildlife species occurring within the planning area.

T&E Amphibians and Reptiles

There are currently no amphibian or reptile species listed as threatened, endangered, or candidate species in the RMP area.

T&E Birds

Piping plover (*Charadrius melodus*) is listed as threatened and is the only bird species listed as T&E under the ESP known to occur in the RMP area. The Piping Plover has not been found on lands managed by the BLM. Most observations are associated with Alkali Lake on the Blackfoot Reservation. Older observations (more than 10 years) were also reported at Benton and Freezeout Lakes.

If species are added to the T&E list in the future and occur or are affected by BLM management actions in the RMP area, then management actions will be developed to conserve, enhance, and protect the species in accordance with the ESA.

Table 2-34

Threatened, Endangered, Proposed, or Candidate Wildlife Species in the Planning Area

Common Name	Scientific Name	Global Rank	State Rank	Endangered Species Status	General Habitat Description
Grizzly Bear	<i>Ursus arctos horribilis</i>	G4	S2S3	Threatened	Conifer forest
Canada Lynx	<i>Lynx canadensis</i>	G5	S3	Threatened	Subalpine conifer forest
Piping Plover	<i>Charadrius melodus</i>	G3	S2B	Threatened	Prairie lakes and river

Common Name	Scientific Name	Global Rank	State Rank	Endangered Species Status	General Habitat Description
					shorelines
Black-footed Ferret	<i>Mustela nigripes</i>	G1	S1	Endangered	Prairie dog towns
Red Knot	<i>Calidris canutus</i>	G4	SNA	Proposed	Coastal habitats-migrant through Montana
Wolverine	<i>Gulo gulo</i>	G4	S3	Proposed	Boreal forest and alpine habitats
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	G3G4	S2	Candidate	Sagebrush
Sprague's Pipit	<i>Anthus spragueii</i>	G4	S3B	Candidate	Grasslands

T&E Mammals

Three mammal species are listed as T&E under the ESA with *potential* to occur in the RMP area. These species are:

- Grizzly bear – *Ursus arctos horribilis* (threatened)
- Canada lynx – *Lynx canadensis* (threatened)
- Black-footed ferret – *Mustela nigripes* (endangered and experimental)

Grizzly bears occur along the Rocky Mountain Front. They were formerly abundant throughout the RMP area but were exterminated from the eastern plains by 1900. Current populations appear healthy and expanding east into prairie habitats. Kendall, et al. (2009) estimated 765 grizzly bears in the Northern Continental Divide Ecosystem (NCDE) in 2004. Mace, et al. (2012) radio-collared and monitored 83 female grizzly bears in the NCDE and estimated a 3.03 percent average annual population growth between 2004 and 2011, resulting in an estimate of 942 grizzly bears in 2011 (NCDE Draft Grizzly Bear Conservation Strategy 2013). A grizzly bear conservation strategy for the NCDE is being cooperatively developed with BLM, FWS, FS, and others to guide management once grizzly bears are delisted. Most LFO-administered lands (surface) are in the Primary Conservation Area (PCA). Table 2-35 shows BLM surface and subsurface ownerships within each of the conservation zones.

Table 2-35
BLM Surface and Subsurface Ownerships within Grizzly Bear Conservation Zones

Ownership	PCA	Zone 1	Zone 2	Zone 3
Surface	25,790	6,527	18,712	37,851
Federal Minerals	103,742	66,230	58,679	296,878
Withdrawn Minerals	84,581	8,257	0	0

Potential Canada lynx habitat occurs, but has not been identified, on BLM surface in the RMP area. Most potential habitat occurs in the four ONAs along the Rocky Mountain Front adjacent to FS-designated Critical Habitat (CH). No lynx CH occurs on BLM lands.

The FWS lists the black-footed ferret endangered for Fergus and Petroleum Counties. No black-footed ferrets currently occur in the LFO. The nearest ferrets are an experimental population located approximately 3 miles northeast of the LFO on the CMR NWR in Phillips County. There are currently no

prairie dog towns or complexes of sufficient size to support black-footed ferret expansion on BLM lands within the LFO.

If any of these species, or species added to the T&E list in the future, is found to occur more regularly on BLM-managed lands in the RMP area, management actions will be developed to conserve, enhance, and protect the species and their habitat in accordance with the ESA.

Montana BLM Sensitive Species

Over 75 percent of the vertebrate animal species considered sensitive by the BLM Montana State Office occur within the RMP area. Appendix F contains a complete list of Montana BLM sensitive species and their habitat requirements. This list is updated every 5 years, at a minimum, and is maintained as changes to the sensitive species list occur.

For most special status species, comprehensive data on population numbers and distribution within the planning area are not available. Occurrence data from the MNHP identify presence and location for some special status wildlife species in the planning area; however, these data reflect observations from opportunistic or project-specific surveys rather than a complete inventory of the RMP area.

In March 2010, the FWS published its listing decision for the Greater Sage-grouse (GRSG) as “Warranted but Precluded” (75 *Federal Register* 13910, March 23, 2010). Inadequacy of regulatory mechanisms was identified as a major threat in the FWS finding on the petition to list the GRSG under the ESA. The FWS has identified conservation measures in RMPs as the principal regulatory mechanism for protecting GRSG on BLM-administered lands. Based on the identified threats to the GRSG and the FWS timeline for making a listing decision (September 2015) on this species, the BLM needs to incorporate objectives and adequate conservation measures into RMPs to conserve GRSG and to avoid the potential for its being listed as a threatened or endangered species under the ESA. In response to the FWS findings, the BLM will evaluate the adequacy of its RMPs and will address, as necessary, amendments and revisions to RMPs throughout the range of the GRSG.

Tables 2-36 and 2-37 show surface ownership amounts within GRSG habitat in LFO and the number of active leks respectively.

Table 2-36

BLM Surface and Federal Mineral Ownerships within Greater Sage-grouse Habitat

Surface Ownership	Priority Habitat Acres (%)	General Habitat Acres (%)
BLM	233,219 (19.3)	112,341 (11.1)
Other Federal Lands	3,688 (0.3)	1,717 (0.2)
State Lands	90,587 (7.5)	83,438 (8.2)
Private	878,171 (72.7)	816,869 (80.4)
Water	2,329 (0.2)	670 (0.1)
Total	1,207,994	1,015,035

Table 2-37

**Active Greater Sage-grouse Leks within the Yellowstone Watershed and Belt Mountains Populations
2012-2013**

Area	Large (≥25 Males)	Medium (10-25 Males)	Small (<10 Males)	Total
LFO PPH (Yellowstone populations)	11	26	46	83
LFO PGH (Yellowstone populations)	0	1	1	2
LFO (Belt Mountains populations)	0	4	1	5

2.6.4.3/4 Trends and Forecast

Black-tailed prairie dogs continue to be impacted by sylvatic plague and the populations of this species fluctuate wildly. Wolves were delisted in 2012 after successfully meeting FWS recovery objectives and are now managed as a game species by MFWP. Grizzly bears are also increasing in the western portion of the planning area. Trends for other mammal species of concern are mostly unknown, although MNHP State Ranks provide a general indication. Up-to-date status and trends are located on the MNHP website: <http://mntnhp.org/SpeciesOfConcern/?AorP=a>.

Trends beyond the RMP area have been noted for many of the sensitive bird species through large scale monitoring efforts such as the region-wide Breeding Bird Surveys (BBSs) but the trends vary by species. The Lewistown planning area is within two BBS Bird Conservation Regions (BCRs): the Northern Rockies (BCR 10) and Badlands and Prairies (BCR 17). The location of BCRs is shown on Map 7.

Table 2-38 shows a summary of bird trend estimates for BCRs 10 and 17 over two different time periods (1966-2012 and 2002-2012) from Sauer, et al., 2014. Caution must be used in interpreting both Table 2-38 summary results and trends over the time periods. Positive trends do not always indicate desirable effects (significantly increasing Eurasian collared dove, a somewhat recent nonnative occurrence, for example); nor do negative trends indicate undesirable effects (significantly decreasing house sparrows).

Table 2-38

Summary Breeding Bird Survey Trends in Bird Conservation Regions 10 and 17

Summary Data for All Species in BCR 10 and BCR 17	BCR 17 Badlands and Prairies		BCR 10 Northern Rockies	
	1966-2012	2002-2012	1966-2012	2002-2012
# Species Encountered on >14 Routes	159	159	215	215
# Species with Positive Trends (%)	89 (56)	114 (72)	101 (47)	123 (57)
# Species with Significant Positive Trends (%)	45 (28)	21 (13)	31 (14)	16 (7)
# Species with Negative Trends (%)	70 (44)	45 (28)	114 (53)	92 (43)
# Species with Significant Negative Trends (%)	18 (12)	1 (1)	52 (24)	13 (6)

In general, species associated with grassland and sagebrush habitats have exhibited downward trends in the US and Canada. “Grassland birds are among our nation’s fastest declining species, yet only 2 percent of all US grassland are both publicly owned and managed primarily for conservation.” (*The State of the Birds 2011*, DOI, 2011, p. 9). The bald eagle and peregrine falcon have been removed from the Endangered Species List since the last RMPs were approved because of increasing trends in populations.

Trends for amphibians and reptiles are difficult to establish because of limited inventory and monitoring information. Northern leopard frogs have disappeared west of the Continental Divide in Montana but populations in eastern Montana have apparently not declined with such severity and populations appear secure at present.

As noted in the Vegetation Section, climate change may have effects on the habitats found in the planning area. Some animal species may benefit from these changes while others may decline.

2.6.4.4 Key Features

- The NCDE GBCS has been developed and planning area lands occur in the PCA, Zones 1 and 3.
- The Greater Sage-grouse RMP Amendment; expected completion in 2014.

2.6.5 Invertebrate Species

During the initial Montana Comprehensive Fish and Wildlife Conservation Strategy (CFWCS) planning stages, the MFWP technical and steering committees determined that the strategy would not include Montana’s invertebrate species. With nearly 1,000 species of aquatic invertebrates in the state and at least twice that number of terrestrial invertebrates, it is impossible at this time to develop a strategy to comprehensively address invertebrate conservation in Montana.

However, it was decided to include aquatic mussels and crayfish. The possibility of securing long-term funding will allow for greater inventory and surveying of invertebrates. These species are especially important because many are considered bioindicators of overall habitat health (Montana CFWCS, p. 188).

There is no additional information regarding current condition, trends, forecasts, and key features for invertebrate species.

2.6.6 Animal Pathogens

- Chytrid fungus (*Batrachochytrium dendrobatidis*) aka *Bd*
- White Nose Syndrome (WNS)
- West Nile virus (WNV)
- Pneumonia

2.6.6.1 Indicators

- Presence detected in Montana; location of confirmed sites in surrounding states
- Acres meeting land health standards
- Number and acres of reservoirs
- Location of permitted domestic sheep or goat allotments in relation to bighorn sheep habitat
- Population density and MFWP population objectives

2.6.6.2 Current Condition

There are numerous pathogens that impact wildlife and humans. “Jones, et al. (2008) found that 60 percent of 335 emerging infectious disease events occurring worldwide since 1940 were zoonoses, with the majority of these (72 percent) originating in wild animals. They also found the proportion of emerging infectious diseases originating in wildlife has increased since the 1940s.” (*Wildlife Techniques*, 7th Edition, Vol. 1, Chapter 7, p. 181).

The following diseases are not exhaustive. They were selected based on the current impacts to focal species, habitat management, and public concern.

White-nose Syndrome (WNS)

Current LFO and Headwaters RMPs do not have special management for bats or WNS. The BLM is partnering with MFWP, FS, MNHP, and grottos to establish baseline bat information prior to WNS occurring in Montana. The Montana Bat Working Group (MBWG) has established WNS emergency response kits across the state containing decontaminated equipment and sampling materials. The MBWG is developing an adaptive management plan for monitoring and appropriate response should WNS be detected in neighboring areas or Montana. The Rocky Mountain Grotto has decontaminated equipment available for spelunkers coming from WNS-contaminated areas. The National White-nose Syndrome Decontamination Protocol is being used for site-specific actions involving caves.

The following section giving a national WNS overview was provided by the USGS National Wildlife Health Center and was accessed on April 8, 2014: http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/.

White-nose syndrome is an emergent disease of hibernating bats that has spread from the northeastern to the central US at an alarming rate. Since the winter of 2007-2008, millions of insect-eating bats in 22 states and five Canadian provinces have died from this devastating disease. The disease is named for the white fungus, *Geomyces destructans*, that infects skin of the muzzle, ears, and wings of hibernating bats.

Current estimates of bat population declines in the northeastern US since the emergence of WNS are approximately 80 percent. This sudden and widespread mortality associated with WNS is unprecedented in hibernating bats, among which disease outbreaks have not been previously documented. It is unlikely that species of bats affected by WNS will recover quickly because most are long-lived and have only a single pup per year. Consequently, even in the absence of disease, bat populations do not fluctuate widely in numbers over time.

The true ecological consequences of large-scale population reductions currently underway among hibernating bats are not yet known; however, farmers might feel the impact. In temperate regions, bats are primary consumers of insects, and a recent economic analysis indicated that insect suppression services (ecosystem services) provided by bats to US agriculture is valued between \$4 and \$50 billion per year.

Despite efforts to contain it, WNS continues to spread. Within the last 2 years, the disease has been confirmed in several central states including Alabama, Indiana, Kentucky, Tennessee, and Missouri. High mortality of bats has not yet been reported at these locations, and it remains to be seen if WNS will develop and manifest in warmer parts of the US or other temperate regions of the world with severity similar to that in the northeastern US. See the map in the Trends Section below for WNS occurrences in North America.

West Nile Virus (WNV)

The WNV is a mosquito-borne virus that can cause a mild fever to encephalitis (swelling of the brain) or meningitis (swelling of the membranes surrounding the brain and spinal cord) in humans and other mammals.

The virus is transmitted to humans, horses and other mammals, and birds by the bite of an infected mosquito, most commonly stagnant water species (*Culex pipiens*).

The virus cycle is maintained in nature between mosquitoes and birds, the latter serving as reservoir hosts. The mosquito becomes infected by biting a bird that carries the virus. An infected mosquito can also spread the virus to a healthy bird. Overwintering adult *Culex* mosquitoes can harbor the virus and thereby serve as one way of sustaining the disease year to year. Refer to:

<http://www.epa.gov/region5/pesticides/wnvfacts.htm>.

Since 2002, when WNV was first reported in Montana, over 90 percent of human cases have been reported in August and September. Refer to:

<http://www.dphhs.mt.gov/newsevents/newsreleases2012/july/westnile.shtml>.

Sheep Diseases

Major bighorn sheep die-offs have been reported from the mid-1800s to present and have been known to occur in every western state (Martin, et al., 1996; Toweill and Geist, 1999). Research shows that contact between bighorn and domestic sheep can lead to respiratory disease and fatal pneumonia in bighorns (Callan, et al., 1991; Foreyt, 1989, 1992a, and 1994; Foreyt and Lagerquist, 1996; George, et al., 2008; Onderka and Wishart, 1988). Therefore, the role that domestic sheep play in causing pneumonia in bighorn sheep is an important issue in multiple-use management (Foreyt, et al., 1994; Hurley, 1999; Schommer and Woolever, 2001; Schwantje, et al., 2006).

Research shows that contact between bighorn sheep and domestic sheep and goats can lead to respiratory disease and fatal pneumonia in bighorn sheep. Although efforts to identify organisms causing pneumonia in bighorn sheep following contact with domestic sheep have identified multiple bacteria species, the complete range of mechanisms/causal agents leading to epizootic disease events are not completely understood. However, based upon the effect of disease transmission, spatial and/or temporal separation between domestic sheep and goats and bighorn sheep is prudent when the management objective is to maintain bighorn sheep populations (Gen. Tech. Rep. RMRS-GTR-209).

Chytrid fungus (*Bd*)

Excerpts from AmphibiaWeb (<http://www.amphibiaweb.org/>):

“Chytridiomycosis is an emerging infectious disease of amphibians caused by an aquatic fungal pathogen, *Batrachochytrium dendrobatidis* (*Bd*) (Daszak, et al., 2003)... *Bd* may be responsible for the greatest disease-caused loss of biodiversity in recorded history (Skerratt, et al., 2007). Over just the past 30 years, *Bd* has caused the catastrophic decline or extinction (in many cases within a single year) of at least 200 species of frogs, even in pristine, remote habitats (Skerratt, et al., 2007)... *Bd* has been found on all continents where amphibians occur; in other words, every continent except Antarctica (Fisher, et al., 2009). *Bd* has also been linked with serious declines almost everywhere that amphibians occur (North, Central, and South America, Australia, Africa, and Europe; Van Sluys and Hero, 2010). While the most dramatic mass mortalities have taken place in Australia, Central America, and North America, researchers are investigating possible *Bd*-related declines in other regions as well.”

Chytridiomycosis (*Bd*) is currently widespread in Montana across a variety of elevations, climate regimes, and levels of human impact. At least four Montana amphibians (western toad, boreal chorus frog, Columbia spotted frog and northern leopard frog) have tested positive for *Bd* (MNHP). The planning area has confirmed *Bd* in Lewis and Clark and Meagher Counties.

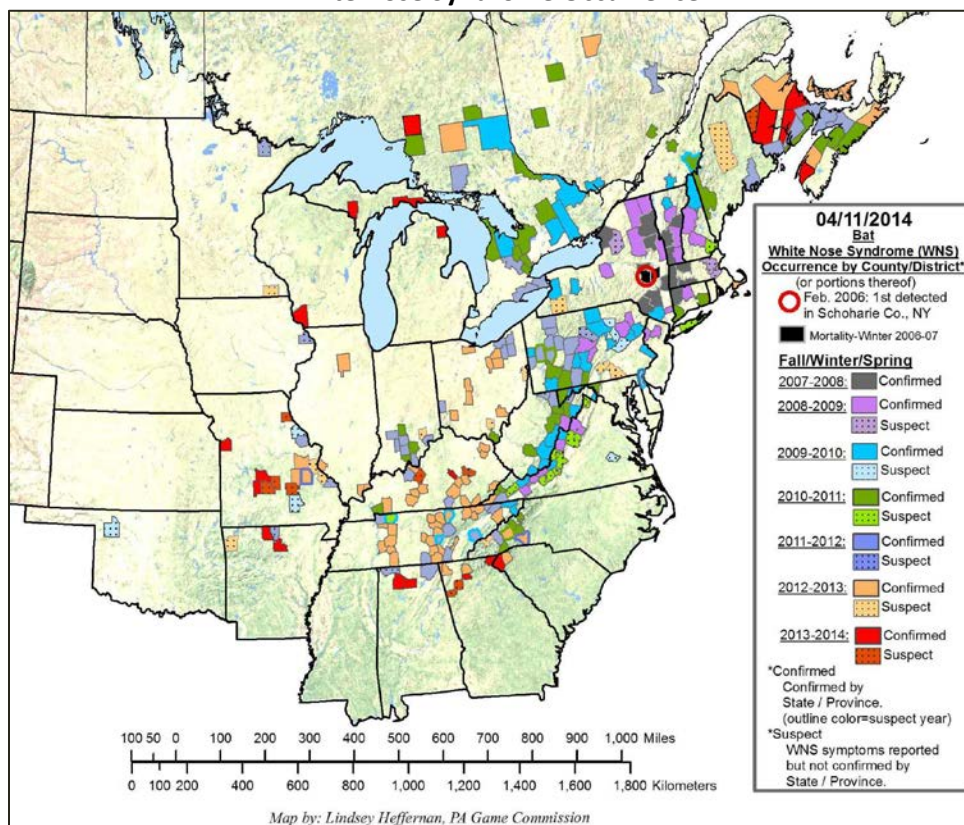
Personnel working in aquatic habitats should follow protocols to prevent spread of this and other waterborne pathogens.

2.6.6.3 Trends

White-nose Syndrome (WNS)

White-nose syndrome continues to spread out from the first detected occurrence in Schoharie County, New York in 2006. No confirmed or suspected detections have occurred in Montana or adjacent states or provinces as of April 2014 (White-Nose Syndrome.org., accessed April 14, 2014 at: <http://www.whitenosesyndrome.org/resources/map>).

Figure 2-12
White-nose Syndrome Occurrence



West Nile Virus (WNV)

Koenig, et al. (2010) “examined the ecological factors influencing population declines in American crows (*Corvus brachyrhynchos*) as they were initially exposed to WNV, a pathogen first detected in the US in 1999 that has since become one of North America's most prevalent vector-borne pathogens. The strongest effects were initial crow population density (denser populations were more likely to suffer declines), avian species diversity (populations in areas with high diversity were less likely to suffer a decline), human population density (populations were more likely to decline in more urban areas), and

time since the pathogen's introduction to the US (populations exposed to the pathogen later in its North American sweep were less likely to suffer declines than those exposed earlier). Variables that played only a minor role included rainfall, mean maximum temperature, and total number of birds, used as a proxy for the overall reservoir competence of the community. These findings indicate that WNV declined in virulence during its rapid 5-year sweep and support the importance of the 'dilution effect' whereby a diverse host community dampens pathogen transmission and potentially slows its rate of spread. Results underscore the need for considering the entire community when trying to understand the factors shaping disease risk."

Sheep Diseases

Bighorn sheep along the Rocky Mountain Front have been exposed to domestic sheep diseases in the past. Once exposed, populations tend to be suppressed and fluctuate with disease. The Missouri River Breaks population has not had disease issues and has grown large, allowing periodic relocations to supplement smaller herds.

Chytrid fungus (*Bd*)

Amphibian populations within the planning area have tested positive for *Bd*, although trends are unknown. Detection by sampling the environment is difficult and best results occur by directly sampling amphibians.

2.6.6.4 Forecast

White-nose Syndrome

Continued population declines are expected for all bat species affected by WNS as the disease continues to spread. Agencies and organizations are proceeding with efforts in Montana under the assumption that WNS will occur in the state in the future.

West Nile Virus

West Nile virus will continue in the planning area with effects likely tapering in the long-term as immunity to the virus increases.

Sheep Diseases

The high vulnerability of bighorn sheep to domestic sheep and goat diseases will continue. Extreme vigilance should maintain the Missouri Breaks population, but increasing disease risk occurs as the bighorn population grows.

Chytrid fungus (*Bd*)

Amphibian stressors, including disease and climate change will likely affect amphibian populations. Mountain species/populations will likely be more affected than plains species.

2.6.6.5 Key Features

- Do not allow temporal or spatial overlap of domestic sheep or goats with bighorn sheep
- Improve/increase pollinator habitat
- Limit human-caused WNS spread
- Reduce mosquito habitat
- Work with MFWP to insure adequate habitat to meet population objectives (60 percent animal unit months [AUMs] allocated to wildlife and watershed; 40 percent to livestock)

2.7 WILDLAND FIRE ECOLOGY

2.7.1 Indicators

In order to plan, measure, and monitor the restoration of fire-adapted ecosystems, the Fire Regime Condition Class (FRCC) model was developed. The FRCC is an interagency, standardized, science-based measurement tool for determining the condition of vegetation and fuels and the level of natural disturbances (Hann, et al., 2003). It is similar to the rating categories for lotic wetland functioning condition or rangeland health assessments. Land use planning must incorporate the FRCC concept by presenting the historic fire regime, current condition class, and desired future conditions (BLM, Fire Planning Handbook H-9211-1, 2012b).

The FRCC is a classification of the amount of departure from the natural (or historical) fire regime (Hann and Bunnell, 2001). The classes include three condition classes for each fire regime, a classification based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuels composition; fire frequency, severity, and pattern; and other associated disturbances (e.g., mortality caused by insects and diseases, grazing, and drought). All wildland vegetation and fuel conditions or wildland fire situations fit within one of the three classes.

A simplified description of the fire regime condition classes and associated potential risks are listed in Table 2-39 below.

Table 2-39
Fire Regime Condition Classes and Potential Risks

Fire Regime Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	• Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. • Composition and structure of vegetation and fuels are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g., native species, large trees, and soil) is low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	• Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). • Composition and structure of vegetation and fuel are moderately altered. • Uncharacteristic conditions range

Fire Regime Condition Class	Description	Potential Risks
		from low to moderate. Risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	• Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). • Composition and structure of vegetation and fuel are highly altered. • Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

The BLM Central Montana Fire Zone (CMFZ) uses the FRCC data as a tool to assess the magnitude of the fuels management problem in the Lewistown RMP planning area. The FRCC can be used to: specify program approaches to the fuels reduction problem, define strategies for managing fire, identify treatment areas, and define measures of accomplishments over time.

Pre- and post-treatment monitoring of planned prescribed fires and mechanical fuel treatment data is used to assess the overall effectiveness of a treatment any changes in FRCC for the vegetation community within the project area.

Fire history records for the LFO RMP planning area are limited due to inconsistent reporting caused by mixed ownership patterns and differing reporting requirements per agency. However, fire records for all BLM-managed wildfires and prescribed fire projects are complete. The CMFZ and DNRC are urging cooperators to report fires that involve BLM-administered lands to the interagency fire data hotline hosted by BLM and DNRC. Until there is a more consistent approach to reporting fires, these records cannot be used as indicators but can be used to assess the general wildfire condition within the planning area.

2.7.2 Current Condition

The CMFZ fire management program focuses on two categories of fires: unplanned ignitions (wildfires) and planned ignitions (prescribed fires). The BLM also modifies fuels with mechanical treatments. Wildfire education and community assistance are also key components of the fire management program.

Unplanned Ignitions (Wildland Fires)

Table 2-40 shows BLM-reported fires in the planning area between 1980 and 2013. Data are summarized from fires reported to the National Interagency Fire Center (NIFC) database. Reported fires include those where BLM provides assistance to other agencies or rural fire departments as well as fires on BLM lands where BLM receives assistance from other agencies or rural fire departments. About 87 percent of the fires were naturally ignited from lightning, and about 13 percent were human caused by equipment, vehicles, powerlines, or unknown sources. This fire history data generally does not include tribal, state, private, or other federal agency fires, unless the BLM assisted with those fires. Rural

volunteer fire departments successfully and independently suppress a very large, but unknown number of fires every year.

Table 2-40
BLM-reported Fires in the Planning Area Between 1980-2012

BLM-reported Fires (1980-2012)		
Total reporting years	34	
Reported fires	793	
Total action fires	623	(minus false alarm, assist and natural out fires)
Maximum fires in a year	64	in 2003
Average fires/year	23	total reported fires/reporting years
Total acres	188,466	Acres
Average acres/year	5,543	Acres
Maximum fire size	32,237	acres in 2006
Average fire size	238	Acres
Maximum yearly acres	40,308	acres in 2006

The number of fires varies from year to year and is dependent on the amount of moisture associated with lightning-producing thunderstorms. The size of fires fluctuates from year to year, depending on the availability of the primary fire carrier or vegetative fuel. Grasses and shrubs are the primary fire carriers in the lower-to-middle elevations, and their growth is dependent upon precipitation received during the late winter and spring months. At the higher elevations, primary carriers are pine needles, litter, and duff.

Wildland Fire Response within Planning Area

The BLM fire and fuels organization responsible for the Lewistown RMP planning area is a centralized zone operation that includes the Central and HiLine Districts. Fire suppression resources are dispatched out of the Lewistown Interagency Dispatch Center.

Fire Management Units (FMUs)

The *Fire/Fuels Management Plan Environmental Assessment/Plan Amendment For Montana and the Dakotas* (BLM, 2003) amended the approved *Judith-Valley-Phillips RMP* (1994) and the *Headwaters RMP* (1984) to adopt standard fire management categories, which range from Category A where fire (including prescribed fire) is not desired at all to Category D where fire is desired and there are no constraints on its use (*Fire/Fuels Management Plan Environmental Assessment/Plan Amendment For Montana and the Dakotas*, 2003). These categories are applied to the RMP planning area's FMUs in the CMFZ's current and approved *Fire Management Plan* (BLM, 2004).

Table 2-41
Fire Management Unit (FMU) Categories in the Fire Management Plan

FMU Category	Description
A	Fire is not desired at all.
B	Unplanned fire is likely to cause negative effects.
C	Fire is desired to manage ecosystems, but current vegetation condition creates constraints on use.
D	Fire is desired; no constraints on use.

The planning area is broken into five fire management units (FMUs): Big Open, Breaks, Front, Island Ranges, and Prairie Forests. A FMU is a geographic area with similar plant communities as well as resource and fire management objectives. The BLM also has protection responsibilities for the Snowies FMU which is FS ownership, and Twin Coulee Wilderness Study Area (WSA) which is administered by the BLM, Billings Field Office. Map 8 shows the FMUs found within the planning area. The northern portion of Lewis and Clark County (Butte FO) is located within the Island Ranges FMU. This portion of Lewis and Clark County is now managed by the Western District Fire Zone (WDFZ) but is included in this plan due to office boundary restructuring in 2012.

Three of the five FMUs identified within the planning area (Big Open, Island Ranges, and Prairie Forest) are classified as Category B - areas where unplanned fire (natural or human caused) is likely to cause negative effects including risks to private lands, urban interfaces, cultural resources, visitor use areas, and federally-owned facilities. These effects can be minimized or avoided through fuels management, prevention of human-caused fires, or other strategies. The Snowies and Twin Coulee FMUs are also classified as Category B.

The Breaks and Front FMUs have been identified as Category C - areas where fire is desired to manage ecosystems but current vegetative condition, as well as social and political concerns, create constraints on use. Vegetation and fuel buildup, as well as intermixed private lands, create such constraints in these FMUs. Emphasis on reducing unwanted ignitions, resources threats, and fuels accumulations are fire suppression and use considerations.

Table 2-42
Fire Management Units within the Planning Area

Fire Management Unit	BLM	Private	State	Other Federal	Water
Big Open	28,513	3,289,875	334,901	42,743	15,723
Breaks	207,167	151,402	21,900	54	408
Front	30,387	441,551	107,388	13,410	834
Island Ranges	103,664	3,338,014	287,859	66,338	1,203
Prairie Forest	283,574	1,513,336	140,577	3,580	2,329
Total	653,305	8,734,178	892,625	126,126	20497

Planned Ignitions (Prescribed Fire) and Mechanical Fuels Treatments

Fuels treatments are developed to reduce fuels and meet resource objectives in wildland urban interface (WUI) areas and non-WUI areas. A combination of mechanical, hand, and fire treatments are used to accomplish project objectives. Hazardous fuels reduction treatments have been implemented and are ongoing in the planning area. Table 2-43 summarizes fuels reduction treatments in the planning area since the beginning of the program in 2000. Mechanical treatments were not utilized to modify fuels in the planning area until 2002 when the *National Fire Plan* began making funds available for those kinds of projects.

Table 2-43
Fuels Treatments from 2000-2013

Year	Mechanical Treatment (WUI) Acres	Mechanical Treatment (Non-WUI) Acres	Prescribed Fire (WUI) Acres	Prescribed Fire (Non-WUI) Acres	Yearly Treatment Totals (Acres)
2000	-	-	73	-	73
2001	-	-	55	2,190	2,245
2002	-	-	64	1,673	1,737
2003	78	260	-	831	1,169
2004	-	100	156	1,735	1,991
2005	639	21	1,000	-	1,660
2006	893	-	-	851	1,744
2007	765	-	415	107	1,287
2008	583	27	433	21	1,064
2009	137	161	53	1,800	2,151
2010	200	100	131	1,650	2,081
2011	278	200	-	641	1,119
2012	118	200	-	3,465	3,783
2013	28	96	-	1,766	1,890
Totals	3,719	1,165	2,380	16,730	23,994

Project plans for fuels treatments in the LFO RMP planning area are analyzed through environmental assessments (EAs) with interdisciplinary (ID) input. In some cases, projects may be addressed by ID teams in watershed or landscape plans. Fuels treatments for resource improvement are generally initiated by resource specialists, whereas hazardous fuels treatments in the urban interface are generally initiated by BLM fuels personnel. Where mechanical (thinning) projects include the sale of merchantable timber, the project is co-planned and implemented by forestry and fuels personnel. Larger mechanical projects are implemented through contracts, and all prescribed fire projects are implemented with BLM resources and other federal, state, and local resources.

The FRCC per fuel model and fire regime is provided in Table 2-44. Pre- and post-treatment FRCC data is used to determine the overall effectiveness of a mechanical and/or prescribed fire treatment.

The five natural (historical) fire regimes are classified based on the average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant over-story vegetation. These five regimes include:

- I 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75 percent of the dominant over-story vegetation replaced);
- II 0-35 year frequency and high (stand replacement) severity (greater than 75 percent of the dominant over-story vegetation replaced);
- III 35-100+ year frequency and mixed severity (less than 75 percent of the dominant over-story vegetation replaced);
- IV 35-100+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant over-story vegetation replaced); and
- V 200+ year frequency and high (stand replacement) severity.

The three fire regime classes are based on low (FRCC 1), moderate (FRCC 2), and high (FRCC 3) departure from the central tendency of the natural (historical) regime (Hann and Bunnell, 2001; Hardy, et al., 2001; and Schmidt, et al., 2002). The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside. Table 2-39 offers a simplified description of each FRCC level.

Characteristic vegetation and fuel conditions are considered to be those that occurred within the natural (historical) fire regime. Uncharacteristic conditions are considered to be those that did not occur within the natural (historical) fire regime, such as invasive species (e.g., weeds, insects, and disease), “high graded” forest composition and structure (e.g., large trees removed in a frequent surface fire regime), or repeated annual grazing that maintains grassy fuels across relatively large areas at levels that will not carry a surface fire.

Table 2-44
Fire Regime and Condition Class (FRCC) per Fuel Model

Geospatial Fuel Models	Fire Regime	FRCC	BLM Acres Within Planning Area	All Acres Within Planning Area
1 Short Grass	Fire Regime I	Condition Class 1	368	7,678
		Condition Class 2	2,715	84,627
		Condition Class 3	207	6,138
	Fire Regime II	Condition Class 1	3,581	461,101
		Condition Class 2	91,710	1,831,893
		Condition Class 3	255,180	1,547,716
	Fire Regime III	Condition Class 1	663	155,005
		Condition Class 2	5,471	229,602
		Condition Class 3	125	40,775
	Fire Regime IV	Condition Class 1	16,257	150,967
		Condition Class 2	4,469	116,589
		Condition Class 3	332	3,050
	Fire Regime V	Condition Class 1	1	1,303
		Condition Class 2	2	935
		Condition Class 3	28	4,424

Geospatial Fuel Models	Fire Regime	FRCC	BLM Acres Within Planning Area	All Acres Within Planning Area
2 Timber, Grass & Understory	Fire Regime I	Condition Class 1	4,439	28,949
		Condition Class 2	22,795	81,327
		Condition Class 3	788	6,661
	Fire Regime II	Condition Class 1	2,963	156,079
		Condition Class 2	21,308	550,180
		Condition Class 3	52,226	311,718
	Fire Regime III	Condition Class 1	209	60,085
		Condition Class 2	3,492	96,188
		Condition Class 3	44	1,500
	Fire Regime IV	Condition Class 1	26,232	147,726
		Condition Class 2	2,820	53,980
		Condition Class 3	136	2,756
	Fire Regime V	Condition Class 1	0	2,010
		Condition Class 2	38	1,231
		Condition Class 3	191	2,514
3 Tall Grass	Fire Regime I	Condition Class 1	0	3
		Condition Class 2	0	71
		Condition Class 3	0	4
	Fire Regime II	Condition Class 1	0	185
		Condition Class 2	0	1,461
		Condition Class 3	0	1,291
	Fire Regime III	Condition Class 1	3	4,209
		Condition Class 2	69	11,440
		Condition Class 3	15	2,917
	Fire Regime IV	Condition Class 1	0	13
		Condition Class 2	0	161
		Condition Class 3	0	2
	Fire Regime V	Condition Class 1	0	3
		Condition Class 2	0	0
		Condition Class 3	1	114
4 Chaparral	Fire Regime I	Condition Class 1	0	0
		Condition Class 2	0	29
		Condition Class 3	0	0
	Fire Regime II	Condition Class 1	0	1
		Condition Class 2	0	1
		Condition Class 3	0	7

Geospatial Fuel Models	Fire Regime	FRCC	BLM Acres Within Planning Area	All Acres Within Planning Area
	Fire Regime III	Condition Class 1	0	0
		Condition Class 2	0	1
		Condition Class 3	0	0
	Fire Regime IV	Condition Class 1	0	1
		Condition Class 2	0	2
		Condition Class 3	0	0
	Fire Regime V	Condition Class 1	0	0
		Condition Class 2	0	0
		Condition Class 3	0	0
5 Brush	Fire Regime I	Condition Class 1	32	2,373
		Condition Class 2	1,055	62,364
		Condition Class 3	46	4,660
	Fire Regime II	Condition Class 1	2,093	72,584
		Condition Class 2	3,933	141,219
		Condition Class 3	9,317	125,019
	Fire Regime III	Condition Class 1	455	89,551
		Condition Class 2	2,300	124,419
		Condition Class 3	87	1,235
	Fire Regime IV	Condition Class 1	4,549	36,259
		Condition Class 2	1,198	74,802
		Condition Class 3	174	6,948
	Fire Regime V	Condition Class 1	0	204
		Condition Class 2	29	2,409
		Condition Class 3	30	2,781
6 Dormant Brush	Fire Regime I	Condition Class 1	8	581
		Condition Class 2	228	13,606
		Condition Class 3	6	940
	Fire Regime II	Condition Class 1	0	159
		Condition Class 2	5	634
		Condition Class 3	3	218
	Fire Regime III	Condition Class 1	6	224
		Condition Class 2	6	907
		Condition Class 3	15	671
	Fire Regime IV	Condition Class 1	0	23
		Condition Class 2	0	36
		Condition Class 3	0	0

Geospatial Fuel Models	Fire Regime	FRCC	BLM Acres Within Planning Area	All Acres Within Planning Area
	Fire Regime V	Condition Class 1	4	326
		Condition Class 2	27	1,430
		Condition Class 3	95	3,657
7 Southern Rough	Fire Regime I	Condition Class 1	0	86
		Condition Class 2	20	221
		Condition Class 3	0	12
	Fire Regime II	Condition Class 1	0	1
		Condition Class 2	1	8
		Condition Class 3	0	1
	Fire Regime III	Condition Class 1	0	0
		Condition Class 2	0	117
		Condition Class 3	16	272
	Fire Regime IV	Condition Class 1	0	0
		Condition Class 2	0	0
		Condition Class 3	0	0
	Fire Regime V	Condition Class 1	0	4
		Condition Class 2	0	37
		Condition Class 3	0	73
8 Compact Timber Litter	Fire Regime I	Condition Class 1	522	17,671
		Condition Class 2	19,009	544,658
		Condition Class 3	9,473	81,888
	Fire Regime II	Condition Class 1	110	3,271
		Condition Class 2	96	8,034
		Condition Class 3	399	21,814
	Fire Regime III	Condition Class 1	1,772	92,200
		Condition Class 2	18,995	459,360
		Condition Class 3	12,485	141,729
	Fire Regime IV	Condition Class 1	275	62,648
		Condition Class 2	5,709	306,198
		Condition Class 3	2	665
	Fire Regime V	Condition Class 1	2	69
		Condition Class 2	83	3,555
		Condition Class 3	441	23,817

Geospatial Fuel Models	Fire Regime	FRCC	BLM Acres Within Planning Area	All Acres Within Planning Area
9 Hardwood Litter	Fire Regime I	Condition Class 1	3,292	47,292
		Condition Class 2	7,523	48,144
		Condition Class 3	2,909	24,381
	Fire Regime II	Condition Class 1	1	411
		Condition Class 2	14	1,245
		Condition Class 3	57	2,154
	Fire Regime III	Condition Class 1	74	4,087
		Condition Class 2	257	2,225
		Condition Class 3	5	104
	Fire Regime IV	Condition Class 1	0	83
		Condition Class 2	4	632
		Condition Class 3	0	8
	Fire Regime V	Condition Class 1	0	0
		Condition Class 2	0	0
		Condition Class 3	5	183
10 Timber (Understory)	Fire Regime I	Condition Class 1	186	2,825
		Condition Class 2	10,611	272,115
		Condition Class 3	1,277	29,605
	Fire Regime II	Condition Class 1	3	46
		Condition Class 2	4	291
		Condition Class 3	4	241
	Fire Regime III	Condition Class 1	496	14,567
		Condition Class 2	370	76,533
		Condition Class 3	790	5,827
	Fire Regime IV	Condition Class 1	47	53,709
		Condition Class 2	1,709	196,987
		Condition Class 3	0	0
	Fire Regime V	Condition Class 1	0	0
		Condition Class 2	4	6,564
		Condition Class 3	2	1,881

Prescribed fire implementation requires an approved site-specific prescribed fire plan as outlined in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, July 2008.

Community Assistance and Wildfire Education

Counties within the planning area have developed community wildfire protection plans (CWPPs) as a supplement to their pre-disaster mitigation plans (PDMs). The BLM and other agencies provide funding and technical support through community assistance agreements. As directed by the Healthy Forests

Restoration Act of 2003 (HFRA), plans identify and prioritize areas for hazardous fuel reduction treatments that protect at-risk communities. In addition, the plans recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the counties (*Preparing a Community Wildfire Protection Plan: Handbook for Wildland-Urban Interface Communities*, 2004). Through these CWPPs, HFRA legislation enables communities to influence how and where BLM implements fuels reduction projects.

Education efforts within the fire zone have been implemented to provide wildland fire awareness in fire-adapted communities. Educational programs targeting different age groups have been developed to increase awareness of fire ecology; fire mitigation; fire-adapted communities; prescribed fire and mechanical treatment benefits; and fire prevention.

2.7.3 Trends

Increased forest and woodland densities, attributed to years of build-up from fire exclusion and reduced thinning practices coupled with drought conditions and increased insect and disease activities, are contributing to intense and environmentally destructive fires within the planning area. The continuing trend towards severe wildfires within the planning area will have increased environmental consequences.

According to the Montana, North Dakota, and South Dakota Climate Change SIR (BLM, 2010), “Fires, insect pests, disease pathogens, and invasive weed species have increased, and these trends are likely to continue. Changes in the timing of precipitation and earlier runoff increase fire risks.” Furthermore, “Hot, dry weather, which is predicted to occur more frequently throughout the United States, is directly related to wildfires.”

Development (e.g., recreational facilities and residential housing) in areas bordering BLM-administered lands has resulted in an increase in human ignitions, more homes lost, and greater demands for resources necessary to suppress fires.

2.7.4 Forecast

High severity wildfires could become more common due to conditions such as increasing densities in forests, conifer and shrub expansion into grass/shrubland areas, invasive plant species, prolonged drought, and climate change. Development in forested areas will continue to place greater demands on fire management resources and increase risk to human life and property.

The need for management actions that include vegetation treatments which would reduce the threat of high severity fire, especially in forested settings, will increase. Mechanical and fire treatments could improve the status of plant communities relative to their historic fire regime and could restore a more natural fire behavior and effects. Time spent on treatments and maintenance will lead to natural fire regimes being restored (when vegetation succession classes and fuel loadings are similar to reference conditions in terms of percent representation in the landscape) and wildland urban interface areas being maintained for defensible space.

2.7.5 Key Features

Tables 2-39 - 2-44 provide detailed information specific to key features for wildland fire ecology.

2.8 CULTURAL AND HERITAGE RESOURCES

Cultural resources are any prehistoric or historic district, site, building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Cultural resources include archaeological resources, historic architectural and engineering resources, and traditional resources. Archaeological resources are areas where prehistoric or historic activity measurably altered the earth or where deposits of physical remains (e.g., arrowheads, pottery, and bottles) are discovered. Prehistoric cultural resources are those materials deposited or left behind prior to the entry of non-American Indian (i.e., European) explorers and settlers into an area. Historic cultural resources are those materials deposited or left behind after the European presence was permanently established. Architectural and engineering resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic value. Traditional resources can include archaeological resources, structures, topographic features, habitats, plants, wildlife, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The BLM is obligated by various legislation and laws to maintain, inventory, and manage against destruction of cultural resources. Legislation that protects cultural resources includes NEPA of 1964 that requires agencies to consider project impacts on cultural as well as natural resources. The National Historic Preservation Act (NHPA), as amended, requires agencies to consider the effects of their actions on historic properties, including archaeological resources.

Cultural resources are assessed for integrity or as having unique qualities that make the resource eligible for National Register of Historic Places (NRHP) listing which provides for management and protection. Sites are evaluated using four criteria: (a) sites associated with events that have made a significant contribution to the broad patterns of our history; or (b) are associated with the lives of persons significant in our past; or (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or (d) that have yielded, or may be likely to yield, information important to prehistory or history.

The LFO is a large, incredibly diverse area situated within the Northwestern Plains, though the field office also includes the eastern slope of the Rocky Mountains and several island mountain ranges, including the Judith Mountains, Highwood Mountains, Little Belt Mountains, Castle Mountains, Crazy Mountains, North and South Moccasin Mountains, and Big and Little Snowy Mountains. The prehistory and history of Montana, and the Northwestern Plains, generally includes five cultural periods. The periods discussed in this document are Paleo-Indian, Middle Prehistoric, Late Prehistoric, Protohistoric, and Historic. Within the prehistoric periods are various complexes, phases, and sub-phases.

The prehistory of the LFO and the related cultural periods are typically distinguished in the archaeological record by distinctive artifacts and feature types. The Paleo-Indian Period of occupation begins approximately 11,500 years ago and lasts until approximately 7,500 years before present (BP), during the terminal Pleistocene and early Holocene. Small Paleo-Indian groups traveled broadly, while hunting a variety of large animal species using heavy thrusting or throwing spears tipped with stone projectile points. Land use was not intense since populations were fairly small and mobile. The early part of the Middle Period occurred during a relatively dry climatic episode (Altithermal), roughly 8,500 years ago. The earlier period's emphasis on big game hunting gave way to a more diversified economy. Populations expanded and these prehistoric peoples likely moved into mountain, foothill, and river valley regions during the early Middle Period where resources were relatively plentiful. Periods of shifting climate change forced adaptations from resource specific areas to wider areas and back as

animal and plant populations expanded and contracted. Technical advances included the shift from spears to the use of atlatls. As new techniques were developed and populations continued to expand, semi-nomadic, seasonal migration settlement strategies developed.

By the Late Prehistoric Period, another shift back to uplands and open plains occurred with bison as the primary resource focus. At this time, the introduction of the bow and arrow occurs as well as a more widespread, though still relatively rare, use of pottery. The use of the tipi is thought to have provided the inhabitants with transportable and easily set up structures with which they could pursue bison herds.

The Protohistoric Period is characterized by non-Indian immigration and the trade of European items. The introduction and use of Euro-American trade goods (glass beads, brass pendants, musket balls), firearms, and the horse to Native Americans distinguishes the Protohistoric Period. Tribes that historically occupied the LFO area are believed to have entered the area during the Protohistoric Period or slightly before, though there is some speculation. Around AD 1700, the Shoshone, who acquired the horse earlier than other tribes occupying Montana, pushed the Flathead west across the Continental Divide.

The Historic Period distinguishes itself from previous periods with the introduction of mining, railroads, homesteading, farming, and ranching. Early missionaries and the Lewis and Clark expeditions were followed by trappers, traders, pioneers, miners, and homesteaders. A population influx to the area occurred, as well as a concentration of land use involving agriculture and stock raising. Government campaigns that mapped the territory provided a guide for land expansion. The focus on property ownership changed the landscape dramatically, while native populations experienced displacement and were placed onto reservations.

The Homestead Act of 1862 offered free government land to all American citizens and provided farmers with 160 acres of land for a filing fee after fulfilling a five-year period of "proving-up." The soil, though advertised differently, was poor and the growing seasons, dry. Techniques for dry farming allowed for some success, but agriculture and ranching required new water initiatives to develop dams and diversions for irrigation.

A total of 44 million acres were granted to the railroad, 17 million of those in Montana Territory, making the railroad the second largest land owner in the state after the federal government. Since railroads were granted large tracts of land for construction purposes, the railroad companies sold these tracts off to businesses and individuals interested in settling the area. Many banks and land holding companies bought large tracts of railroad granted land and, in turn, sold them to prospective farmers. Transcontinental railroads facilitated movement west and transport of goods east, while pressuring western populations to provide goods for markets.

The late Middle Prehistoric is the best represented prehistoric time period in the study area based on reported diagnostic artifacts. Late Prehistoric diagnostics are next most common. Historic sites are overwhelmingly dated between 1910 and 1919, which coincides with the Montana homesteading boom.

Prehistoric sites documented include lithic scatters, tipi rings, buffalo jumps, pounds, traps, and kill sites. They also include lithic quarries, rock shelters, petroglyphs, pictographs, lithic workshops, and stone feature sites such as stone alignments, cairns, and rock piles. Vision quest structures, fortification structures, medicine wheels, eagle trapping pits, and other rock structures have also been documented.

As of April 2009, the Montana State Historic Preservation Office files report 27,009 recorded cultural resource sites statewide in Montana (Damon Murdo, SHPO Records Manager, personal communication, 2009). Across the entire state, a total of 4,742,184 acres have been inventoried. The site frequency for inventoried lands in Montana is 3.7 sites per square mile (640 acres) of inventoried land.

For inventoried lands within the BLM Central Montana District, as stated above, the site density is 10.8 sites per square mile (640 acres) for all inventoried acres in the study area. The site frequency for the analysis area is nearly three times that for Montana as a whole.

The analysis area contains one of the richest and most varied records of prehistoric and historic sites in Montana. This is due in large part to the remarkable diversity in landforms and ecology that exists within the Central Montana District.

2.8.1 Indicators

The primary indicator for cultural resources is whether there is a loss of those characteristics that may qualify the property for listing on the NRHP or would diminish the cultural value of areas important to the general population, Native Americans, or other traditional communities. The measurement would be the number of sites determined eligible for listing on the NRHP. Based on the same criteria, another indicator is the number of sites listed on the NRHP. This number is a subset of the first, but takes the documentation and analysis to a higher level. The condition of historic structures, which tracks the condition of BLM named sites, structures, and districts, is tracked in the annual heritage report. It notes whether historic sites are in good condition or if they are in fair, poor, unknown, or unreported condition.

- Indicator 1: Number of sites eligible for listing on the NRHP
- Indicator 2: Number of sites listed on the NRHP
- Indicator 3: Number of historic structures in good condition
- Indicator 4: Acres of public land inventoried for cultural resources

2.8.2 Current Condition

The planning area contains approximately 11,830 documented cultural resource sites. These have been recorded during cultural resource inventories conducted primarily in advance of surface-disturbing activities pursuant to Section 106 of the NHPA. Approximately 2,500 inventories have been conducted in the planning area (Table 2-45).

Examples of prehistoric cultural resources include archaeological sites containing evidence of camping or domestic activities, stone tool manufacture, or vegetable and animal food processing; ceremonial sites; animal traps and game drives; stone alignments, petroglyphs, and pictographs. Historic cultural resources include historic artifacts, buildings, mines, trails, railroads, roads, ditches, ranching debris, trash dumps, and scatters over 50 years old. These types of sites are almost exclusively associated with Anglo-European settlement.

Table 2-45
Cultural Resource Statistics for the Planning Area

Total Inventories	Total Acreage of Inventories	Total Documented Cultural Resource Sites
2,500	261,029*	11,830

* Number is based on the 2010 Class I Overview for the Central Montana District.

Inventory and site numbers come from the Montana State Antiquities Database, June 3, 2013. Site numbers come from the spreadsheets maintained by the Montana State Historic Preservation Office. According to the Montana State database administrator, approximately one-third of the inventories are in the Geographic Information System (GIS). “We are definitely way behind in getting anything entered for any of our legacy data, but everything from about 2011 on should only be a few months behind. Sites should be the same as well.” (June 3, 2013).

A total of 261,029 acres have been surveyed within the study area. This includes 132,803 acres of BLM land, or 51 percent of all inventoried acreage in the study area. Overall site density, historic and prehistoric, in the analysis area is one site per 59 acres surveyed. This equals 10.8 sites per square mile for all inventoried acres in the study area. As explained in the previous paragraph, these numbers will need to be adjusted as the Montana GIS layers are updated.

The distribution of the prehistoric sites recorded in the study area is one site per 134 acres or 4.8 sites per square mile of inventoried acreage. The historic sites recorded in the study area are distributed at one site per 106 acres inventoried, or 6 sites per square mile inventoried.

Lithic scatters are the most numerous prehistoric site type in the study area, making up 43.8 percent of all recorded sites. Tipi rings are the next most commonly recorded, consisting of 21.7 percent of all sites.

The most common historic site types are homesteads/farmsteads and residences. Some include standing architecture, but many homestead/farmstead sites in rural settings include foundations and depressions, or are entirely in ruins.

Table 2-46

Cultural Resource Sites, Regardless of National Register (NR) Eligibility, by County

County	Documented Cultural Resource Sites	Documented Cultural Resource Sites on BLM
Cascade	2,536	24
Chouteau	613	90
Fergus	1,526	477
Judith Basin	1,118	10
Lewis and Clark	1,542	34
Meagher	1,579	38
Pondera	824	1
Petroleum	676	440
Teton	1,416	64
TOTAL	11,830	1,178

NOTE: The number of sites is for the entire county; Chouteau and Lewis and Clark Counties' numbers need to be adjusted to remove the portions of the counties outside of the planning area. Their numbers will decline significantly, as Helena and Fort Benton numbers will be removed from these tallies.

2.8.3 Trends

The condition of cultural resources varies considerably as a result of the diversity of terrain, geomorphology, access, visibility, as well as past and current land use patterns. Adherence to Section 106 of the NHPA, the Montana State Protocol, and the BLM policy of avoiding cultural resources provides for the continued identification and preservation of cultural resource sites. The majority of the sites recorded in the planning area have occurred as a result of inventories associated with project-related activities rather than targeting where sites are likely to occur.

Data gathering for cultural resource sites has been ongoing with various changes in the data gathering strategies shifting as theories develop and techniques advance. Due to the changes in data gathering, there are practices common to the process, as well as limitations to the data. One method is to classify and inventory sites with certain characteristics. The State Historic Preservation Office (SHPO) database includes 71 site type classifications for historic sites, which include descriptive categories (historic domestic, historic agricultural, etc.). Prehistoric sites (lithic scatter, rock alignment, bison jump, tipi ring, etc.) include 32 categories.

Most prehistoric sites are categorized as fulfilling criterion d (having scientific data potential), while historic sites are more likely to retain integrity under criteria a (distinctive events) or c (significant characteristics). Eligibility assessment provides government management with “use” categories for the stewardship of present and future heritage properties concerning public use development. Sites designated as “no further work” might be considered not eligible for NRHP listing. Of 1,944 prehistoric sites listed for recommendations, 727 (37.4 percent) have no recommendations. Only five sites (0.25 percent) are listed as having already been tested or excavated, though this may reflect the lack of updating in the database. Recommendations to test or excavate have been made for 362 sites (19 percent). A total of 122 (6.3 percent) are recommended as “preservation warranted”, while 365 (19 percent) have no further work recommended.

With increased tribal involvement and awareness of cultural resource programs in the federal government and involving federally-managed lands, the potential for excavating prehistoric or archaeological sites continues to diminish. More effort is being made to capture the significance of these sites through ethnographic studies involving tribal preservation offices, culture committees, elders, and spiritual leaders.

Proactive inventory, or inventory conducted in compliance with Section 110 of NHPA, has occurred more since 2009, with some work also occurring in the 1970s. A graduate student from University of Montana conducted an inventory and recorded 36 sites along the Rocky Mountain Front in the vicinity of the Sun River. This 1976 effort provided a baseline of data, but the accuracy of site locations due to crude mapping has limited some of its utility.

Table 2-47

Recent Proactive (Section 110) and Large-scale Compliance (Section 106) Inventory

Year	Project	Acres	Section	
			106	110
2008	Rogers Pass	1,840	X	
2008	Central Montana Fuels	2,672	X	
2009	Sun River	1,960		X
2010	Ear Mountain	1,091		X
2010	Kingsbury Lake	80		X
2010	Square Butte	2,800		X
2010	Tin Can Hill Fuels	1,010	X	
2011	Blind Horse North	1,840		X
2011	Kittredge	40		X
2011	Multiple LFO Parcels	5,708		X
2011	Tin Can Hill Fuels	1,915	X	
2011	Tin Can Hill Fuels	2,212	X	
2012	Tunnel Lake	3,240		X

Year	Project	Acres	Section	
			106	110
2012-13	Tin Can Hill Fuels	6,793	X	
2013	Birch Creek	1,118		X
2013	North Fork Smith River	473	X	
2013-14	Tin Can Hill Fuels	2,795	X	

Since 2008, the LFO has surveyed 17,877 acres as proactive Section 110 inventory, and an additional 19,710 acres as part of large-scale Section 106 compliance inventory associated with federal undertakings, for a total of 37,587 acres. Additional inventory has been, and continues to be completed as part of the compliance process for smaller federal undertakings. However, the number of smaller Section 106 inventories has declined. This is due, in part, to a backlog of administrative range work that has limited the ability of the LFO to implement range improvements, which historically has been the primary resource needing cultural resource inventory.

Unless federal budgets continue to decline, the LFO will continue to fund inventories for larger landscape-scale fuels projects. With a continued emphasis on a balanced cultural resource program, the LFO will fund Section 110 inventories in portions of the field office that have not been surveyed, primarily due to a lack of proposed federal undertakings in those areas.

Due to limited site monitoring and protection, site conditions are considered to be declining. Because cultural resources are manifested by discovery of exposed artifacts, features, and/or structures, they are easily disturbed by natural elements such as wind and water erosion, natural deterioration and decay, animal and human intrusion, and development and maintenance activities. Indications of active vandalism or collecting (unauthorized digging) have been observed in limited instances in the past.

Public outreach and involvement will continue to be a critical component of cultural resource management. Involving the public to monitor sites as site stewards, converting historic buildings into cabin rentals, developing history-themed tours, partnering with history and archaeology associations, and involving students at primary, secondary, and collegiate levels will continue to be priorities for the LFO.

2.8.4 Forecast

Under current management, national and Montana goals will continue to be met; however, these goals could be met more efficiently with better tools and additional resources. Pressures on cultural resources will likely increase from the continued emphasis on oil and gas development, and direct and cumulative impacts will continue to degrade a percentage of the cultural landscape. Case-by-case inventory will prevent harm to individual sites, but the lack of comprehensive inventory coverage will continue to hamper broad scale interpretation and assessment of cumulative effects. Inventories would probably continue at roughly 100 or more projects per year, with inventories covering approximately 2,000 acres per year. Impacts to resources that cannot be mitigated could be expected to occur once every 5 to 10 years; however, as oil and gas exploration and development increases, the potential for difficult cultural resources issues to arise also increases.

The demand for consumptive use of cultural resources through tourism and archaeological research projects is low but anticipated to increase through time. This reflects an increasing interest in history and recognition of the fragile nature of the resource. Historic trails, particularly those falling under the

national historic trails (NHT) system, could see increased visitation. Maintaining the historic setting is critical to providing a quality experience for visitors. The setting is an essential component in determining whether a particular trail segment contributes to the trail's overall significance.

Climate Change

Climate change predictions include increased duration and frequency of droughts and an increase in extreme precipitation events. Drought can be relatively short-term (seasonal) or long-term (multiple years). Climate changes that result in increased erosion, fire, or mass wasting of rock outcrops would have direct impacts on cultural resources.

2.8.5 Key Features

Please see Section 2.8.3 for a description of the key features.

2.9 PALEONTOLOGICAL RESOURCES

Paleontological resources (fossils) have long been recognized for their scientific, educational, and recreational value. A fossil is any evidence of past life, and includes body fossils such as shells and bones, as well as trace fossils such as footprints, burrows, trails, or other evidence of an organism's presence. Fossils are preserved in rocks and are usually discovered when they are eroding out of the rock at the surface, or during ground-disturbing activity such as road grading or trenching. Most individual organisms that lived in the past did not die in such a way as to have their remains fossilized, and fewer still will be collected and studied before they erode away. Therefore, fossils are considered rare and nonrenewable.

All fossils contain information about past life, but not all fossils have significant paleontological interest. Fossils with significant paleontological interest are those that are unique, unusual, or rare; are diagnostic; stratigraphically important; and add to the existing body of knowledge. Conversely, fossils that lack sufficient paleontological interest are those that are redundant, lack provenience, are fragmentary, or otherwise are not useful for scientific investigation and, therefore, do not need to be preserved in perpetuity. In order to determine a fossil's paleontological interest, an assessment must be made by someone who is experienced in the field of paleontology and who possesses a sufficient mastery of the existing body of knowledge to understand how a given fossil contributes to our overall understanding.

The BLM has managed fossils as a valued public land resource for many years. Legal authority to manage fossils comes from a variety of laws, executive orders, and policies. The laws include NEPA and FLPMA. More recently, the Paleontological Resources Preservation subtitle of the Omnibus Public Land Management Act of 2009, also known by its popular name, the Paleontological Resources Preservation Act (PRPA), directs land managers within the USDI agencies and the USDA, but not including either Indian or Military (Department of Defense) lands, to manage and protect fossils using scientific principles and expertise. The PRPA does not make a distinction between the types of organism preserved; therefore, all paleontological resources, plants, invertebrates, and vertebrates are to be actively managed.

The BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect or mitigate these resources from adverse impacts. To accomplish this goal, paleontological resources must be professionally identified and evaluated, and paleontological data must be considered as early as possible in the decision-making process. Paleontological resources are

managed according to the BLM 8270 Handbook and BLM Manual for the Management of Paleontological Resources and any interim instruction memoranda (IMs) and information bulletins (IBs).

2.9.1 Indicators

Fossils are found in rocks. The rocks that we see today were formed over millions, and sometimes billions, of years. When the animal or plant that we find today as a fossil was alive the environmental conditions of that location were significantly different. For example, the rock that fossils are found in today may have been formed by sediments at the bottom of an ocean, or along the edge of a tropical river or lake. By using the evidence preserved in the rocks and by examining fossils, scientists can piece together the history of the Earth, its changing environmental conditions, and its changing lifeforms.

Given that most fossils are preserved in sediments from past environments that have been changed into rocky outcrops, understandably, most fossils are found in sedimentary rocks. The other major categories of rocks, igneous and metamorphic, are much less likely to preserve fossils—however it is not impossible.

Igneous rocks are those that are related to volcanic activity, wherein the rock is formed by the cooling of magma or lava, or during a volcanic eruption. While those environments are not generally suitable for living things, there are on rare occasions fossils associated with igneous rocks. For example, an animal may be killed by lava, but the cooling rocks might preserve an impression of the animal as a mold. Such a mold is a fossil—evidence of past life. Entire herds of rhinos have been preserved under ash deposits resulting from distant volcanic eruptions. And the development of caves or fissures in these otherwise unfossiliferous rocks could produce extensive collections of fossils.

Metamorphic rocks are those that have been changed by extremes of heat and pressure. Fossils that occur in the rocks prior to undergoing metamorphic change can be preserved as long as the metamorphism is low grade and not extreme enough to alter them beyond recognition. Such might be the case in a limestone with fossils that gets altered to a low grade metamorphic marble with fossils still visible.

Geologists have mapped the rocks exposed at the Earth's surface. Rocks that are similar in character, usually due to how they formed, are organized into mappable units called formations. Formations are formal units and are given names consisting generally of a place name and the word "formation," or the characteristic rock type. Examples include the Morrison Formation and the Aspen Shale. The place name is generally derived from the region in which the formation is first recognized.

Given that the environment in which a formation forms will strongly influence its likelihood of preserving fossils, and not all formations are equally likely to have fossils, the BLM uses a coding system to rank a formation's probability of containing significant fossils. This system is the Potential Fossil Yield Classification (PFYC) (Appendix 1), a numerical ranking from 1 (low potential) to 5 (very high potential). This system allows land managers to predict where significant fossils will occur in order to make informed planning decisions with regard to fossil resources.

In its practical application, the PFYC is intended to help land managers plan where to focus resources during the planning or execution of ground-disturbing activities. The system can also be used by researchers in helping them to focus attention on fossil-bearing rock units or, perhaps more importantly, to highlight formations whose fossil potential is little known, pointing toward gaps in our paleontological knowledge.

Management plans used by the BLM to inform the actions of resource managers use the PFYC; so do consultants working for project proponents whose projects involve public land. The system can be used to inform the project proponents of areas of high likelihood for fossil resources so adequate planning can be done to mitigate the irreversible destruction of a valued heritage resources.

It is intended that this system replace the current condition classification in the Handbook (H-8270-1), for Paleontological Resource Management. In general, Table 2-48 shows a comparison of the condition classification rankings to the new PFYC classes.

Table 2-48

Potential Fossil Yield Classification Condition Classification Comparisons

Condition (from H-8270-1)	PFYC Class (IM 2008-009)
Condition 1 – Areas known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. (Note: this refers to known localities or groups of localities.)	PFYC Class 4 (High) or Class 5 (Very High), based on geologic unit.
Condition 2 – Areas with exposures of geological units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.	PFYC Class 3 (Moderate), Class 4 (High), or Class 5 (Very High), based on geologic unit.
Condition 3 – Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.	PFYC Class 1 (Very Low) or Class 2 (Low).

However, several important points should be kept in mind. Fossils are not evenly distributed throughout a formation, and so even highly ranked formations may produce only occasional fossils in a given locality. Similarly, fossils can be found in unlikely places. For example, granite bedrock might be given the lowest potential rating, but have a crevice or cave structure that is rich in fossils. Fossils have been found in basalt (Beck, 1935), a rock type that would be easy to discount as fossil bearing. Indeed, the discovery of a fossil in a Class 1 rock unit might be all the more significant given its unexpected occurrence. The system is just designed to help in planning and cannot replace detailed analysis on a case-by-case basis by trained personnel.

Users of the system most often rely on a geologic map of the area of interest. Areas of Montana/Dakotas have been mapped at various scales and to varying levels of precision. The PFYC is formation based, but frequently, geologic maps show units that are lumped together for practical reasons. Those needing to implement the PFYC system should score the geologic units on maps with the highest PFYC rating given to the units separately. For example, when formations ranked 3 and 4 are mapped together, the entire combined unit should be considered as ranking a 4 for planning and mitigation purposes.

Sometimes rock units are not mapped by a formal formational unit, but are mapped based upon their geologic or lithologic character. Geologic and paleontological knowledge and experience is needed to apply the PFYC ranks to these units.

2.9.2 Current Condition

Under the PRPA, paleontological resources are identified as important scientific and heritage resources to be managed and protected using scientific principles and expertise. Also under PRPA, agencies are to

develop plans for inventory, monitoring, and the scientific and educational use of paleontological resources.

According to existing regulations and policies, the public may casually collect (without a permit) common invertebrate or plant fossils in reasonable quantities for personal, noncommercial use. Such casual collection of fossils may not involve power tools, and the activities may not cause disturbance to the surface that would have impacts on other natural or cultural resources. Commercial collection of fossils is not allowed. All other collection of fossils must be done under a permit issued by the BLM to a qualified paleontologist, either for research and educational purposes, or as salvage and mitigation of resources impacted due to surface-disturbing projects like pipelines, oil and gas activities, and road development as examples. All fossils collected under a permit remain the property of the United States and must be repositied at an approved repository.

Loss of fossil resources typically occurs due to natural erosion or through theft and vandalism. The BLM seeks to avoid the loss of significant fossils by conducting periodic inventories for fossil localities, by monitoring known fossil sites for erosion activity, by encouraging the responsible collection of fossils by qualified paleontologists, and by vigorously pursuing criminal activities.

The Lewistown FO area covers a wide range of geology and includes rock units of all PFYC ranks. Table 2-49 provides the formations present with ranks 3-5. Presently, 51 geologic formations or units are recognized as having a PFYC rank of 3-5 (moderate or unknown to high fossil potential). Of those, 8 are ranked 5, 10 are ranked 4, and the remainder are ranked 3.

A summary of known paleontological localities in the planning area and the UMRBNM was completed by Hanna (2009). She identified a total of 554 fossil localities by gathering museum data, localities cited in publications, records searches with Montana SHPO, Montana DNRC, and records of the BLM. Specific locality data is confidential and not released; however, they are summarized in Table 2-50. Fergus and Teton Counties combined make up 70 percent of all the paleontology localities identified, by far more than any of the rest of the counties in the planning area.

2.9.3/4 Trends/Forecast

As part of the management direction provided by PRPA, the BLM will be developing plans for inventory, monitoring, and ensuring the use of fossil resources for scientific and educational benefits. Currently, the extent of casual collection of fossils on BLM lands by the public is unknown. Future developments in the paleontology program might include exploring plans for quantifying and promoting the casual collection of fossils by the public, as allowed by policy and regulation.

Permitted collection of fossils for scientific research and salvage is likely going to remain consistent with past uses. However, plans will be developed in the future to encourage and increase this use of the resource for inventory, monitoring, and scientific study as mandated by PRPA.

Table 2-49 lists geological formations or units in the Lewistown FO area with a PFYC Class of 3-5 in approximate stratigraphic order, from oldest at the bottom to youngest at the top. Fossils listed for each unit are generalized, and they were not necessarily found in the planning area.

Table 2-49
Geological Formations with PFYC Class (3-5)

Formation	Age	PFYC Class	Fossils Present
Older Alluvium, terrace, glacial deposits	Pleistocene	3	Potential mammal megafauna
Sedimentary rocks, undivided	Tertiary	3	Potential mammals and plants
Deep River Formation	Miocene	4	Numerous mammal faunas
Fort Logan Formation	Oligocene and Miocene	5	Mammal faunas
Fort Union Formation	Paleocene	4	Mammals and plants
Hell Creek Formation	Cretaceous	5	Dinosaurs and plants
Lance Formation	Cretaceous	5	Plants, tracks, and dinosaurs
St. Mary River Formation	Cretaceous	4	Dinosaurs and mammals
Fox Hills Formation	Cretaceous	4	Pelecypods, bryozoans, crab, shark, and amphibians
Two Medicine Formation	Cretaceous	5	Dinosaurs, including eggs, nests, and juveniles
Billman Creek Formation	Cretaceous	3	Plants, mollusks, and dinosaurs
Bearpaw Shale	Cretaceous	3	Marine reptiles, dinosaurs, and ammonites
Judith River Formation	Cretaceous	5	Dinosaurs and mammals
Sedan Formation	Cretaceous	3	Plants, mollusks, and dinosaurs
Claggett Shale	Cretaceous	3	Plants, sharks, dinosaurs, and marine reptiles
Eagle Formation	Cretaceous	3	Dinosaurs and cephalopods
Virgelle Formation	Cretaceous	3	Ammonites and pelecypods
Telegraph Creek Formation	Cretaceous	3	Mollusks
Horsethief Sandstone	Cretaceous	3	Burrows, mollusks, dinosaur bone, and eggshell
Niobrara Formation	Cretaceous	3	Fishes
Carlile Shale	Cretaceous	3	Plesiosaurs, crocs, and cephalopods
Greenhorn Formation	Cretaceous	3	Mollusks and fishes
Frontier Formation	Cretaceous	3	Sharks, dinosaur, and croc
Cody Shale	Cretaceous	3	Mollusks, fish, shark, and marine reptiles
Marias River Formation	Cretaceous	3	Ammonites, scaphites, and burrows and trails
Belle Fourche Shale	Cretaceous	3	Mollusks, fish, sharks, and ichthyosaurs
Mowry Shale	Cretaceous	3	Ammonites, fish, marine reptiles, and pterosaurs
Thermopolis Shale	Cretaceous	4	Marine reptiles, sharks, and turtles
Blackleaf Formation	Cretaceous	4	Vertebrates, including the first dinosaur burrow

Formation	Age	PFYC Class	Fossils Present
Fall River Formation	Cretaceous	3	Sharks
Kootenai Formation	Cretaceous	5	Mollusk, reptiles, dinosaurs, and mammals
Morrison Formation	Jurassic	5	Dinosaurs and plants
Swift Formation	Jurassic	3	Mollusks and crinoids
Rierdon Formation	Jurassic	4	Mollusks, insects, and fishes
Piper Formation	Jurassic	3	Corals and pelecypods
Sawtooth Formation	Jurassic	3	Ammonites, pelecypods, and crinoids
Amsden Formation	Pennsylvanian	3	Trilobites, echinoderms, mollusks, brachiopods, bryozoans, and coelenterates
Alaska Bench Formation	Pennsylvanian	3	Crinoids, brachiopods, pelecypods, and sharks
Tyler Formation	Mississippian	4	Crinoids, brachiopods, and trilobites
Bear Gulch Limestone Member, Heath Formation	Mississippian	5	Early fish skeletons, some with soft tissue and pigments preserved
Heath Formation	Mississippian	4	Crinoids, brachiopods, and trilobites
Otter Formation	Mississippian	3	Brachiopods and crinoids
Mission Canyon Formation	Mississippian	3	Corals and brachiopods
Lodgepole Limestone	Mississippian	3	Echinoderms, brachiopods, and mollusks
Three Forks Formation	Devonian	3	Brachiopods and ammonites
Jefferson Limestone	Devonian	3	Variety of megafossils
Maywood Formation	Devonian	4	Brachiopods, echinoids, and placoderm fish
Snowy Range Formation	Ordovician	3	Trilobites
Pilgrim Limestone	Cambrian	3	Trilobites, gastropods, brachiopods, and crinoids
Park Shale	Cambrian	3	Brachiopods and trilobites
Meagher Limestone	Cambrian	3	Trilobites
Wolsey Shale	Cambrian	3	Trilobites

Table 2-50

**Percentage of the Total Number of Paleontological Localities Identified by County within the
Lewistown Planning Area**

County	Percent
Cascade	6.1
Chouteau	2.5
Fergus	43.3
Judith Basin	3.4
Lewis and Clark	3.6
Meagher	9.7
Pondera	1.1
Petroleum	3.8
Teton	26.3

Percentages do not exactly total 100 due to rounding.

2.9.5 Key Features

Key features related to paleontological resources are the same as those described in Sections 2.9.1 and 2.9.2.

2.10 VISUAL RESOURCES

The BLM visual resource management (VRM) system has two stages. The first consists of completing a visual resource inventory (VRI), which was completed in 2014 for the Lewistown FO by Logan Simpson Design Inc. Once VRI classes are created, they are then balanced with other uses and sensitivities and given a VRM class during the land use planning process. The inventory process (described in detail in BLM Handbook H-8410-1) involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points.

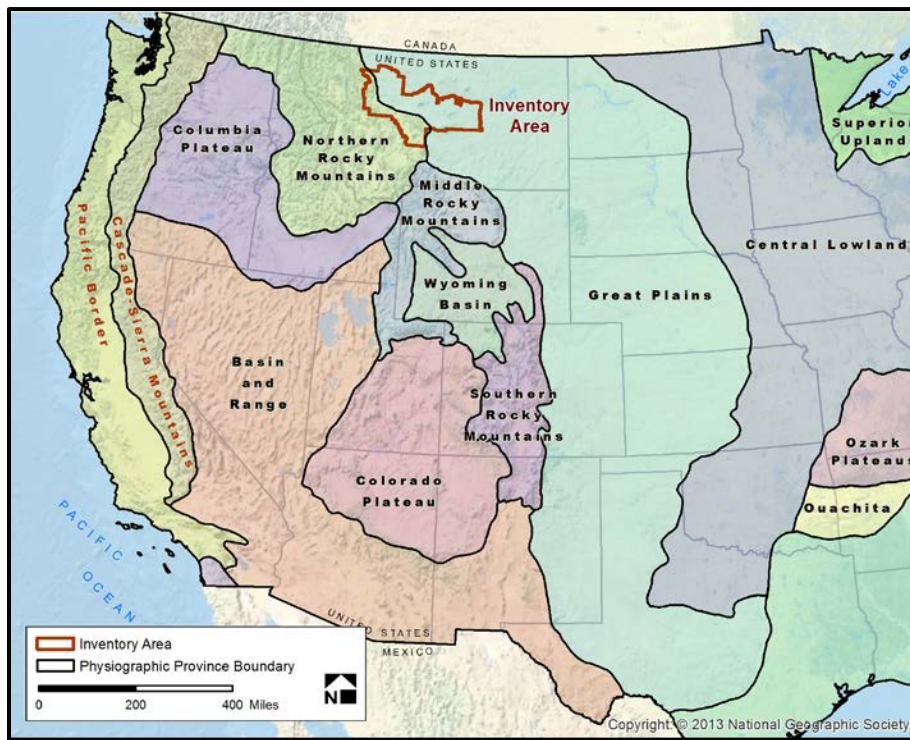
2.10.1 Indicators

VRI Classes

The area's visual resources are rated based on a combination of scenic quality, viewer sensitivity, and distance zones. The VRI classes are assigned solely on these factors.

Scenic Quality is a measure of visual appeal. Landscapes are rated within the context of the physiographic province in which they are located. For the planning area, the inventory area falls within either the Great Plains or the Northern Rocky Mountain physiographic provinces (Figure 2-13).

Figure 2-13
Location of Physiographic Provinces



The degree of harmonious visual variety and diversity in a landscape's landform, vegetation, water features, influence of adjacent scenery, scarcity, and degree to which cultural modifications detract or enhance the landscape determines its rating. The scenic quality classes in the BLM system are assigned a Class A, B, or C rating.

Class A: Distinctive, high degree of visual variety

Class B: Common or typical, moderate degree of visual variety

Class C: Minimal value or below average, low degree of visual variety

Sensitivity is a measure of the general public's acceptance of visual change to the landscape. Ratings of high, medium, or low are determined based on six factors including the type of users, amount of use, public interest (local, regional, national, or international), adjacent land uses, special factors, and other factors. High sensitivity ratings provide a general idea of where visual change to the public is less accepting of visual change to the landscape and a low rating meaning the public is more accepting of visual change.

Distance zones are characterized as areas within a range of distance from where the general public commonly views the landscape (e.g., roads, campgrounds, and neighborhoods). Delineation of distance zones include the foreground-middle ground zone (less than 3 to 5 miles away), background zone (to a distance of 15 miles away), and seldom seen zone (more than 15 miles away or hidden from view in any zone).

VRM Classes

Visual values are considered with other resource values and uses in the land use planning process to establish VRM classes. The VRM classes establish specific objectives for evaluating visual impacts of future management projects.

VRM Class I: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change by the activity to the characteristic landscape should be very low and must not attract attention.

VRM Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

VRM Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

VRM Class IV: The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The analysis stage involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments will meet the management objectives established for the area, or whether design adjustments will be required. The BLM uses a visual contrast rating process to evaluate visual impacts. The contrast rating process, described in BLM Handbook H-8431-1, involves comparing the project features with the major features in the existing landscape using the basic design elements of form, line, color, and texture. The analysis can then be used as a guide for resolving visual impacts. Once every attempt is made to reduce visual impacts, BLM managers can decide whether to accept or deny project proposals. Managers also have the option of attaching additional mitigation stipulations to bring a proposal into compliance.

The objective of VRM is to manage public lands in a manner which will protect the quality of the scenic (visual) values of those lands. The VRM objectives are established in conformance with land use allocations made in the plan. The VRM objectives are area specific and provide visual standards for planning, designing, and evaluating proposed development projects. Proper implementation of VRM helps prevent environmental degradation and maintain important resource values.

In summary, the VRM system is a means to identify visual values and, through the RMP process, establish VRM objectives for managing those values, and to provide timely evaluation of proposed surface-disturbing projects to ensure VRM objectives are met.

2.10.2 Current Condition

Visual Resource Condition

Visual resource inventories had initially been completed for portions of the planning area, but not the entire planning area. The updated VRI has been conducted for the entire planning area. Inventory classes are determined by combining the results of a scenic quality evaluation, analysis of visual sensitivity levels, and a determination of distance zones. Visual inventory information will be carried forward to the RMP process.

The VRI area encompasses the Lewistown FO and the northern portion of Lewis and Clark County in the Butte FO. The inventory area covers approximately 12,900,150 acres of land within the two field office areas, with 654,424 (approximately 5 percent) of those acres being managed by the BLM. The inventory area is primarily bound by the Marias and Missouri Rivers and Fort Peck Lake to the north; the Musselshell River to the east; the Little Snowy Mountains, Little Belt Mountains and Crazy Mountains to the south; and the Big Belt Mountains and the eastern portion of the Rocky Mountain Front to the west.

The public lands in the planning area contain a wide variety of scenic landscapes. This geologically and topographically diverse area contains mountain slopes, rolling hills, coulees, rugged hills, and river valleys. Particularly notable scenic areas include the Rocky Mountain Front, Square Butte, Judith Mountains, BLM land adjacent to the Big and Little Snowy Mountains and the Little Belts Mountains, portions of the Chain Buttes and East Indian Butte Block Management Areas, and portions of the Missouri River, Sun River, Smith River, and Judith River.

The inventory area can be divided into two general geographic areas as delineated by the Great Plains and Northern Rocky Mountains physiographic provinces.

The Great Plain province and the associated Missouri Plateau section in the central and eastern region of the inventory area, extend from central Texas north to include a portion of New Mexico, Oklahoma, Colorado, Kansas, Nebraska, Wyoming, Montana, North Dakota, and South Dakota.

Elevations in this province area are roughly 2,000 to 5,000 feet and are characterized primarily by rolling to rough, grassy plains. The east-tilted surface has been formed by the deposition of sediment eroded from the uplifting Rocky Mountains beginning approximately 65 million years ago. Over time, this region has been eroded by many east-flowing rivers that have exposed older rocks beneath, often exposing some of the nation's most spectacular dinosaur fossils.

The Northern Rocky Mountains province, located in the western region of the inventory area, covers the western third of Montana and extends into central and northern Idaho with a small portion located in northeastern Washington.

The mountains of the Northern Rockies are generally not as high as those of the Middle and Southern Rockies with summit elevations that are typically 6,800 to 7,800 feet and are more uniform in height than peaks in other parts of the Rocky Mountains. Approximately 80 percent of the drainage of the Northern Rockies is westward, contrasting with the Southern Rockies in which only about one-third is westward; drainage in the Middle Rocky Mountains province is about equally divided between the east and west.

Per BLM policy, all WSAs are designated as VRI Class I, which includes: Square Butte WSA and North Fork Sun River WSA in the Lewistown FO, and Beaver Meadows WSA in the Butte FO. Based on the Outstanding Natural Area (ONA) Activity Plan, Blindhorse ONA, Ear Mountain ONA (excluding Ear

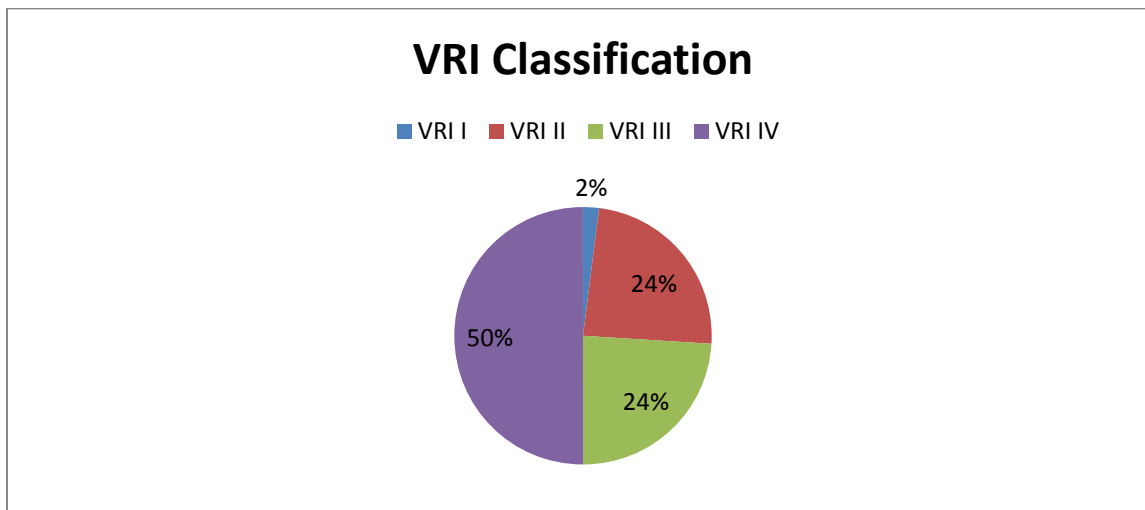
Mountain Trailhead), Chute Mountain ONA, and Deep Creek/Battle Creek ONA are also classified as VRM Class I. Between the WSAs and the ONAs, there are 15,012 acres of VRI Class I. Class II areas include the Judith Mountains (Judith Mountains Scenic Area ACEC and Collar Gulch ACEC), portions of BLM land along the Judith River, portions of BLM land south of the UMRBNM along the Missouri Breaks where the land is viewable from the river, BLM land surrounding the Big and Little Snowy Mountains, and portions of BLM bordering the CMR NWR.

The VRI Class IV comprises the majority of the public lands in the planning area. In general, areas located on or near transportation routes, areas undergoing oil and gas or other development, and areas with less visual variety and scenic quality are in this category. Table 2-51 shows VRI classes within the planning area. Figure 2-14 shows the percent of land base by VRI class within the Lewistown planning area.

Table 2-51
Acres of VRI Classes within the Lewistown Planning Area

VRI Class	Acres
Class I	15,012
Class II	151,051
Class III	156,706
Class IV	317,126

Figure 2-14
Percent of VRI Classes within the Lewistown Planning Area



Current management practices have reduced some impacts to the visual resources in the planning area. Contrast ratings are completed for major projects proposed on public lands that fall within VRM Classes I, II, and III with high sensitivity levels (Handbook H-8431-1). Any surface-disturbing activities on BLM-administered public lands have been mitigated so as to maintain the objectives of the VRM class that the BLM parcel is managed under. The result is land uses that blend with the surrounding natural elements.

2.10.3 Trends

The BLM authorizes a wide variety of activities which have the potential to impact scenic quality. Activities include decades of grazing, vegetation and habitat improvement projects; ROW projects; logging; creation of infrastructure (e.g., roads); and mineral extraction operations. All of these activities have left an imprint on the land and on the overall scenic quality. The BLM analyzes proposed projects in the decision area on a project-by-project basis for their impact to VRM classifications and includes, where possible, mitigation and minimization measures to design structures that blend with the natural background to minimize disturbances to the visual landscape.

Portions of the decision area not easily accessible by the public, either due to the lack of legal public access or due to terrain characteristics, have generally retained a higher level of natural appearance.

Recreational opportunities, experiences, and benefits are heavily influenced by the scenic quality of the landscapes.

2.10.4 Forecast

The present VRM class determinations do not adequately reflect the visual quality of the region and VRM mitigation standards have not been sufficiently outlined in the RMP. Cumulative impacts from continuation of the current management practices could reduce the visual quality in some areas. A thorough VRI was completed for the entire planning area to adequately reflect the visual quality of the region.

The VRI will also incorporate a distance zone analysis and a visibility analysis for the Lewis and Clark NHT, Nez Perce NHT, and Continental Divide National Scenic Trail (NST). The visibility analysis for national trails is required by BLM 6280 policy and allied with BLM 8410 - Visual Resource Inventory.

2.10.5 Key Features

Key features in the planning area include areas with unique landforms, a high degree of naturalness, and/or lack of motorized accessibility. These include: Square Butte WSA, North Fork Sun River WSA, Beaver Meadows WSA, Lewis and Clark NHT, Nez Perce NHT, Continental Divide NST, Judith Mountain Scenic Area ACEC, and BLM land bordering the Rocky Mountain Front FS land. All of these key features have a VRM I classification.

2.11 WILDERNESS CHARACTERISTICS

A wilderness review of the BLM-administered public lands was mandated with the passage of FLPMA. Section 201 of FLPMA requires the BLM to continue to maintain an inventory of all public lands and their resources and other values. This inventory requirement directs BLM to maintain and update, as necessary, its inventory of wilderness characteristics. In 2012, the BLM updated this policy to conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under NEPA (within BLM Manual 6320 - Considering Lands with Wilderness Characteristics (LWC) in the BLM Land Use Planning Process).

The BLM Manual 6310 - Conducting Wilderness Characteristics Inventory on BLM Lands (BLM, 2012) provides the latest policy and guidance for conducting wilderness characteristic inventories under Section 201 of FLPMA. This manual provides guidance for areas that are not under WSA designation.

The BLM lands are assessed for wilderness characteristics on a continuing basis using the potential for naturalness, solitude, and opportunity for primitive types of recreation. The BLM Manual 6320 provides guidelines to manage these areas.

2.11.1 Indicators

- **Size:** The assessments of wilderness characteristics are based on roadless tracts of public lands of 5,000 acres, or are adjacent to recommended wilderness and possess characteristics of naturalness, solitude, and primitive recreation.
- **Naturalness:** Lands with naturalness characteristics are affected primarily by the forces of nature, and are areas where the imprint of human activity is substantially unnoticeable. The BLM has authority to inventory, assess, and/or monitor the attributes of the lands and resources on public lands which, taken together, are an indication of an area's naturalness. These attributes may include the presence or absence of roads and trails, fences and other improvements, the nature and extent of landscape modifications, the presence of native vegetation communities, and the connectivity of habitats.
- **Solitude:** Visitors may have outstanding opportunities for solitude when the sights, sounds, and evidence of other people are rare or infrequent and where visitors can be isolated, alone, or secluded from others.
- **Primitive Recreation:** Outstanding opportunities for primitive and unconfined types of recreation are encountered where the use of the area is primarily through nonmotorized, nonmechanical means, and characterized by undeveloped types of recreational activities where no or minimal developed recreation facilities are present.

Public lands possessing the above values may be managed to maintain some or all of those characteristics. The BLM will continue to consider the wilderness characteristics on public lands as part of its multiple-use mandate in developing and revising land use plans and when making subsequent project level decisions. When such lands are determined to be present, the BLM will examine options for managing these lands and determine the most appropriate land use allocations for them. Considering wilderness characteristics in the land use planning process may result in several outcomes, including, but not limited to: (1) emphasizing other multiple uses as a priority over protecting wilderness characteristics; (2) emphasizing other multiple uses while applying management restrictions (conditions of use, mitigation measures) to reduce impacts to wilderness characteristics; and (3) the protection of wilderness characteristics as a priority over other multiple uses.

2.11.2 Current Condition

A wilderness review of the BLM-administered public lands was mandated with passage FLPMA in 1976. Section 603 of that act directed the BLM to inventory all public lands under its jurisdiction for the presence of wilderness characteristics as specified in Section 2 (c) of the 1964 Wilderness Act. The inventory in Montana was initiated in 1978. The inventory phase was divided into two portions, the "initial" and "intensive" inventories. A final report was completed in 1980. Lands within the eastern portions of the planning area were addressed under the "Lewistown District" sections of *Montana Wilderness Inventory (Miles City and Lewistown BLM Districts)* (BLM, 1980). The BLM lands located in the Overthrust Belt, a geologically-disturbed area of the Rocky Mountains in the western portion of the planning area were inventoried in *Montana Overthrust Belt Wilderness Inventory* (BLM, 1980). This inventory is to be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values.

An update of the wilderness characteristics inventory of public lands in the planning area is being completed for the Lewistown RMP project. The first step is to identify lands which meet the following criteria:

- Contain 5,000 acres of contiguous BLM lands; or
- Are contiguous with lands which have been formally determined to have wilderness or potential wilderness values, or any federal lands managed for the protection of wilderness characteristics;
- Have sufficient size (less than 5,000 acres) as to make practicable preservation in an unimpaired condition;
- Is a roadless island of public land.

Forty-four units were originally brought forward from the original inventory and from a GIS analysis that found areas greater than 5,000 acres. The inventory will consider 36 units (259,064 acres) identified from the initial and final wilderness inventories for the Lewistown and Butte Districts including additional areas that were not considered in the 1980 wilderness inventory. Detailed locations of units currently being inventoried are included in Appendix G.

Table 2-52
Lands with Potential Wilderness Characteristics

Identification	Unit Name	GIS Acres
MT-060-001	Pyramid Peak	5,171
MT-060-002	Pike Creek	12,324
MT-060-003	Cemetery Road	10,924
MT-060-004	Spear Coulee	5,139
MT-060-005	Thompson Coulee	5,377
MT-060-007	Dunn Ridge	10,046
MT-060-008	Biggett Coulee	5,004
MT-060-009	Elk Creek	5,504
MT-060-010	Welter Divide	5,805
MT-060-011	Dry Blood	5,373
MT-060-012	Red Mountain	6,117
MT-068-217	Big Snowies Tack-On B	609
MT-068-217	Big Snowies Tack-On A	717
MT-068-220	Cat Creek	7,841
MT-068-221	Cottonwood	13,022
MT-068-223	Blood Creek	20,773
MT-068-224	Dovetail	15,868
MT-068-226	Dry Armells	9,348
MT-068-229	Carter Coulee	12,409
MT-068-230	Carroll Coulee	6,944
MT-068-233	Drag Creek	21,426
MT-068-235	Little Crooked Creek	12,172
MT-068-236	West Crooked Creek	20,298
MT-068-237	Horse Camp Trail	11,397
MT-068-238	Chain Buttes	7,654
MT-068-240	Fort Musselshell Tack-On A	5,629

Identification	Unit Name	GIS Acres
MT-068-241	Fort Musselshell Tack-On B	611
MT-075-102	Blind Horse Creek	4,927
MT-075-104	Ear Mountain	1,793
MT-075-105	Chute Mountain	3,103
MT-075-106	Deep/Battle Creek	3,073
MT-075-107	North Fork of Sun River	194
MT-075-110	Beaver Meadows	593
MT-075-123	Missouri River Island	22
MT-075-126	Missouri River Island	17

Table 2-53

Potential Areas Eliminated from Possible Wilderness Characteristics Consideration

Identification	Name	GIS Acres
MT-068-218	Petroleum North Tier (7 noncontiguous parcels)	5,079
MT-068-219	Little Box Elder (divided by ROWs)	3,977
MT-068-219	Little Box Elder (divided by ROWs)	2,052
MT-068-219	Little Box Elder (divided by ROWs)	454
MT-068-219	Little Box Elder (divided by ROWs)	124
MT-068-219	Little Box Elder (divided by ROWs)	85
MT-068-219	Little Box Elder (divided by ROWs)	3,977
MT-068-225	Arrow Creek (divided by ROWs)	2,963
MT-068-225	Arrow Creek (divided by ROWs)	4,569
MT-068-225	Arrow Creek (divided by ROWs)	1,790
MT-068-227	Armells Creek (not included in UMRBNM*)	1,089
MT-068-228	Fargo Coulee (not included in UMRBNM*)	639
MT-068-244	Dog Creek South (not included in UMRBNM*)	3001
MT-068-245	Chimney Bend (not included in UMRBNM*)	2,560
MT-068-247	Woodhawk Creek (not included in UMRBNM*)	1,841

* These units are adjacent to the UMRBNM but have not been inventoried within the UMRBNM boundary. Wilderness characteristics have not been inventoried outside of the Lewistown Planning Area.

2.11.3 Trends

During the RMP process, the BLM will analyze whether any BLM-administered public lands outside of the current WSAs possess wilderness characteristics. Current trend information on areas with wilderness characteristics indicates an overall quality of naturalness and opportunities for solitude and primitive, unconfined recreation. The current planning area has seen an increasing trend of multiple uses with an emphasis on recreational developments, agricultural infrastructure, routes and ROWs, and increased visitation. The eastern portion of the planning area has experienced increased elk hunting opportunities and, overall, public recreation has increased in importance due to restricted access to private lands. There have been some localized improving trends due to decreased intensity of livestock management operations, improvement of land health conditions, and declines of energy production. Regionally, the interest in areas with wilderness characteristics is increasing with recreationists. Recreationists will continue to seek out areas with wilderness characteristics because of values such as primitive and unconfined recreation opportunities and outstanding opportunities for solitude.

Additional acreage to be managed for its wilderness characteristics will require inventory and careful consideration in the development of management alternatives.

2.11.4 Forecast

Future commercial and residential development and recreation use could reduce or eliminate naturalness, solitude, and primitive recreation values in areas with wilderness characteristics that lie outside established WSAs if they are not managed specifically to preserve such values.

With increased demand for consumptive and nonconsumptive resources, and an increase in the growth of development in areas containing naturalness and primitiveness, the demand for rights-of-way (ROWs) on BLM-administered public lands containing wilderness characteristics will likely increase from the current 15 ROW applications to 18 ROW applications per year. There is an increased demand for road ROWs across public land to provide legal access to private land. Most of these road ROWs are being requested to provide a legal access document for sale of a parcel or residence. While subdivision development is limited within the planning area, any large blocks of scenic, undeveloped lands are vulnerable to that activity. The increased demand for road ROWs could create a number of natural resource impacts and contribute to a growing rural-urban interface.

While there has been some speculation about increased oil and gas activity within the planning area, most LWC units being inventoried are located in areas with none to negligible development potential. The remaining LWC areas being inventoried occur in very low (1 well per township) to low (1-5 wells per township) areas of potential oil and gas development.

It is not likely that renewable energy (wind) would be developed on LWC lands in the planning area. There are no existing wind authorizations or pending applications within the planning area. The lack of application activity and proximity to private lands, suggest there is little to no activity for wind energy expected to occur within the planning area that would diminish wilderness characteristics.

The major land use presently occurring in LWC units is livestock grazing. Grazing practices have improved within the planning area evidenced by an increasing number of grazing allotments documented to be in conformance with land health standards. While improved vegetative conditions correlate with improved qualities of naturalness, development of additional range improvement projects and increased intensity of livestock management is likely to continue to degrade naturalness and opportunities for solitude. Maintenance and construction of range improvement projects and current levels of livestock management are expected to continue.

2.11.5 Key Features

Key features for lands with wilderness characteristics are the same as those described in Sections 2.11.1 and 2.11.2.

2.12 CAVE AND KARST RESOURCES

According to the Federal Cave Resources Protection Act of 1988 (FCRPA), a cave is defined as any naturally-occurring void, cavity, recess, or system of interconnected passages occurring beneath the surface of the Earth or within a cliff or ledge large enough to permit an individual to enter, whether or not the entrance is naturally formed or man-made. Cave resources are fragile due to their association with other resources such as groundwater systems, biological communities, fossils, archaeological sites, cultural values, and mineral formations.

2.12.1 Indicators

Under FCRPA, a cave is considered significant if it meets one or more of the following six criteria:

- **Biota:** The cave serves as seasonal or yearlong habitat for organisms or animals, or contains species or subspecies of flora or fauna native to caves, or is sensitive to disruption, or contains species found on state or federal sensitive, T&E species lists.
- **Cultural:** The cave contains historic or archaeological resources included in, or eligible for inclusion in, the NRHP because of its research importance for history or prehistory, its historical association, or other historical or traditional significance.
- **Geological/Mineralogical/Paleontological:** The cave possesses one or more of the following features: geologic or mineralogical features that are fragile or exhibit interesting formations.
- **Hydrologic:** The cave is part of a hydrologic system or contains water important to humans, biota, or development of cave resources.
- **Recreational:** The cave provides, or could provide, recreational opportunities or scenic values.
- **Educational or Scientific:** The resource offers opportunities for educational or scientific use or is in a virtually pristine state, lacking evidence of contemporary human disturbance or impact, or the length, height, volume, total depth, or similar measurements are notable (43 CFR Part 37).

The FCRPA declares significant caves on federal lands as an invaluable and irreplaceable part of the nation's heritage. Improper use, increased recreational demand, urban spread, and a lack of specific statutory protection threatens caves. The purpose of FCRPA is to secure, protect, and preserve significant caves on federal lands for the perpetual use, enjoyment, and benefit of all people, and to foster increased cooperation and exchange of information between governmental authorities and those utilizing caves located on federal lands for scientific, educational, or recreation purposes. The US USDI implementation regulations for FCRPA require that federal lands be managed in a manner that, to the extent practical, protects and maintains significant caves and cave resources (43 CFR Part 37.2).

2.12.2 Current Condition

A preliminary cave inventory was conducted in 2012 that helped identify potential cave and karst resources within the planning area. This inventory used publication, record searches, and caver knowledge.

Within the planning area, there are two caves that meet the criteria to be considered significant: Tate-Poetter Cave and Crystal Cave.

2.12.3 Trends/Forecast

Recreational use and interest in exploring caves continues to increase. Recreational cavers, or spelunkers, constitute the majority of users. On a national scale, many caves have been closed to entry to mitigate the spread of fungus related to WNS.

2.12.4 Key Features

Key features for cave and karst resources are the same as those described in Sections 2.12.1 and 2.12.2.

RESOURCE USES

2.13 MINERALS AND ENERGY RESOURCES

2.13.1 Energy Solid Leasable Minerals

Energy solid leasable minerals are those minerals which are leased under the Mineral Leasing Act of 1920 that are related to energy production. These energy leasable minerals include, but are not limited to, coal and oil shale. Development of these resources on minerals owned by the US is done through exploration licenses and licenses to mine.

Indicators

The primary indicator of energy leasable mineral resources is the number of leases, exploration licenses, or licenses to mine within the planning area. Active leases and licenses are a quantitative measure that indicates current use. In association with geologic occurrence, areas of historic mining, exploration, and leasing can also be used to indicate development potential.

2.13.1.1 Current Level

There are no federal mineral leases or licenses for coal or oil shale in the planning area.

2.13.1.2 Forecast

Within the planning area, there has never been any federal oil shale development and no coal leasing has occurred in the past 20 years. Much of the coal that was mined historically was to supply local demand for power plants in central Montana or smelting in Great Falls. With other sources of energy more readily available, these local demands have since been reduced. There is no potential coal or oil shale development anticipated in the near future.

2.13.1.3 Key Features

Coalbeds are present in the Cretaceous Kootenai Formation, Eagle Sandstone, and Judith River Formation. Though unlikely, the most likely location for potential development in the planning area would be within the Kootenai Formation in the Lewistown and Great Falls coal fields.

There is an oil-shale-bearing unit found within the Mississippian-aged Heath Formation of central Montana (Derkey, et al., 1985). The thinness and low oil yield of this bed have discouraged development.

2.13.2 Oil and Gas Leasables

This section describes leasable fluid mineral resources. Leasable fluid minerals include (1) oil, (2) gas, (3) coal bed natural gas, and (4) geothermal resources. The BLM has developed rigorous guidelines for the preparation of an RMP for Fluid Minerals. These guidelines are described in BLM Handbook H-1624-1, Planning for Fluid Mineral Resources (BLM, 1990). This handbook is supplemented by Instruction Memorandum (IM) No. 2004-089 (BLM, 2004a) that presents the Policy for Reasonably Foreseeable Development (RFD) Scenario for Oil and Gas.

Leasable fluid mineral resources are made available by the USDI through a discretionary leasing program. Leases are generally issued with stipulations (restrictions or limitations) attached to the lease to protect other resource values. Following issuance of a lease, surface activity on a lease may include

drilling, covered by an Application for Permit to Drill (APD). The APD requires additional analysis for NEPA compliance. A discovery of oil or gas could lead to the development of production facilities and this, too, requires additional NEPA compliance. For further discussion about fluid mineral development across the planning area, please refer to the Lewistown RFD.

Coal bed natural gas, although it has a low potential for development in the planning area, is not currently developed. Any exploration or development would be conducted according to the fluids management program.

2.13.2.1 Current Level

A petroleum system exists wherever certain essential geologic elements and processes occur together in time and place. The essential geologic elements of a petroleum system include the presence of a source rock, reservoir rock, seal rock, and overburden rock. Formation of the trap, and the generation, migration, and entrapment of hydrocarbons are processes involved with a petroleum system. These essential geologic elements and processes must be correctly placed in time and space so that organic matter in a source rock can be converted into hydrocarbons, which then migrates and accumulates into a hydrocarbon trap (Magoon and Beaumont, 1999) or accumulates in the hydrocarbon trap itself. The absence of any essential geologic element or process prevents the accumulation of hydrocarbons into a trap. Without the trapping mechanism, hydrocarbons would be allowed to escape and no hydrocarbons would be trapped in the geological structures.

There are effective petroleum systems present within the study area, as evidenced by the presence of oil and gas fields in Pondera, Petroleum, Teton, Fergus, and Cascade Counties. However, just the sheer presence of oil and gas fields does not necessarily make the prospects viable productive areas. There is still a certain amount of risk that goes with the oil and gas business, and not every area containing oil and gas will produce oil and gas at commercial rates. With respect to the five counties mentioned above, only one in approximately three wells drilled can be considered productive. Many factors affect the success of well(s) drilled in an area which may include but are not limited to the following: geologic conditions, price of the product, infrastructure, operating environment, remoteness to other oil and gas centers (service companies/tool companies), and regulatory restraints.

The planning area consists of the following known geologic structures important to leasable fluid mineral resources: South Sweetgrass Arch, Central Montana Uplift, Montana Thrust Belt, and the southern extent of the Alberta Basin. Approximately, the western third of the RMP area is underlain by the southern portion of the Sweetgrass Arch and the southern extent of the Alberta Basin, while the very western edge of the RMP area is underlain by the Montana Thrust Belt. The northern extent of the RMP area (i.e., bordering the Missouri River Corridor) lies at the southern edge of the Bearpaw Uplift. The Central Montana Uplift underlies the eastern half of the RMP area. Table 2-54 provides a brief summary for the oil and gas fields in the planning area. The top row indicates the cumulative produced oil and gas product per county as of 2013 (PI/Dwights). Each row thereafter includes the fields per the county, year of discovery, and general location of each field.

Table 2-54**Oil and Gas Fields by County in the Lewistown Planning Area**

Pondera 31,989,202 BBLs Oil 19,994,214 MCF Gas	Petroleum 13,112,561 BBLs Oil 233,111 MCF Gas	Teton 7,939,145 BBLs Oil 9,699,502 MCF Gas	Fergus 0 BBLs Oil 2,163,943 MCF Gas	Cascade 0 BBLs Oil 0 MCF Gas
Brady (Oil) 1943 27N-2W	Brush Creek (Oil) 1923 16N-27E	Agawam (Oil) 1983 26N-4W	Armells (Gas) 1922 17N-20E	Otter Creek (Gas) 1925 19N-7E
Broken Bow (Gas) 1979 27/28N-1E/1W	Cat Creek (Oil) 1920 15N-29/30E	Bannatyne (Oil) 1927 25/26N-1E	Leroy (Gas) 1972 22/23N-18/19E	
Conrad, South (Oil) 1957 27N-2W	Cat Creek, Mosby Dome (Oil) 1920 15N-29/30E	Bills Coulee (Gas) 1968 27N-6W	Spindletop (Gas) 1943 13N-23E	
Cocker Springs, East (Oil) 1982 29N-6W	Cat Creek, West Dome (Oil) 1920 15N-29E/30E	Blackleaf Canyon (Gas) 1980 26N-8/9W		
Cutbank (Oil) 1926 31N-5/6W	Kootenai (Oil) 1920 16N-26E	Gypsy Basin (Oil) 1956 27N-7W		
Dry Fork (Gas) 1979 29N-3W	McDonald Creek (Oil) 2001 15N-25E	Highview (Both) 1953 27N-6W		
Fort Conrad (Gas) 1978 30/31N -2W	Oiltana (Oil) 1920 16N-28E	Pondera (Oil) 1934 26/27N-4/5W		
Gypsy Basin (Both) 1955 28N-6/7W	Rattlesnake Butte (Oil) 1922 13/14N- 25/26/27/28E	Pondera Coulee (Oil) 1927 27N-5W		
Gypsy Basin, North (Both) 1978 28N-6W		Runaway (Both) 1979 25N-3W		
Hardpan (Gas) 1950 26/27N-2/3E		Second Guess (Oil) 1987 26N-17W		
Highview (Both) 1948 28N-6W				

Pondera 31,989,202 BBLs Oil 19,994,214 MCF Gas	Petroleum 13,112,561 BBLs Oil 233,111 MCF Gas	Teton 7,939,145 BBLs Oil 9,699,502 MCF Gas	Fergus 0 BBLs Oil 2,163,943 MCF Gas	Cascade 0 BBLs Oil 0 MCF Gas
Lake Francis (Gas) 1978 28/29/30N-5/6W				
Ledger (Gas) 1973 29/30N-1/2W				
Marias River (Gas) 1940 31N-2/3W				
Marias River, South (Gas) 1977 30N-3W				
Meander (Oil) 1967 27N – 2/3W				
Midway (Oil) 1942 28N-2W				
Pondera (Both) 1927 27N-3/4/5W				
Pondera Coulee (Both) 1928 27N-5W				
Valier (Gas) 1979 29N-5W				
Williams (Gas) 1977 29/30N-3/4W				
Wishbone (Gas) 1980 26N-1E				

2.13.2.2 Trends and Forecast

The main objectives of the oil and gas program are to foster a fair return to the public for its resources, ensure environmentally acceptable activities within the program, and provide for conservation of the fluid mineral resources without compromising the long-term health and diversity of the land. The BLM's management of the oil and gas program accomplishes several functions in support of the main objectives including: (1) supporting the domestic need for energy resources; (2) making eligible lands

available for leasing through proper planning; (3) timely processing of applications and notices for exploration and development; and (4) conducting inspections of operations and ensuring compliance with lease terms and regulations.

The oil and gas program currently consists of exploratory drilling, field development and infill development. As of June of 2013, there were 358 authorized oil and gas leases in the planning area, encompassing over 291,727 acres. In the Lewistown RMP area, there were 356 leases covering approximately 291,528 acres, while in the Butte RMP area (north part of Lewis and Clark County), there were 2 leases covering approximately 199 acres.

It is assumed that future drilling rates and the number of successful wells during the 20-year planning period will be similar to what has occurred during the past 20 years.

Based upon the BLM's Automated Fluid Minerals Support System (AFMSS) well database, IHS Energy's well database, and the Montana Board of Oil and Gas Conservation's well database, there have been approximately 3,966 wells drilled within the study area as of March 2014. Figure 2-15 is a graph illustrating the total number of wells drilled within the jurisdiction of the Lewistown FO by decade. It is interesting to note the high level of activity between the 1920s and 1980s when the majority (94 percent) of the activity within this area occurred. During the past couple of decades, the study area has received relatively little interest from the oil industry compared to prior decades when more than 50 wells were drilled per year during some years.

Figure 2-15

Total Number of Wells Drilled per Decade in the Planning Area

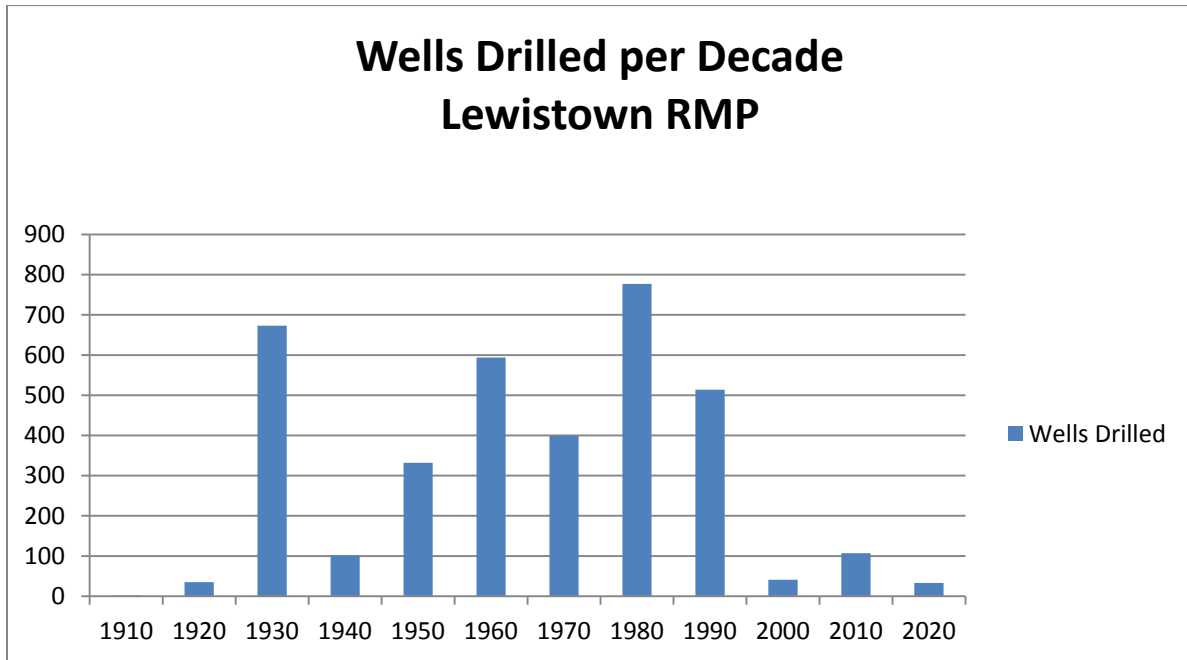
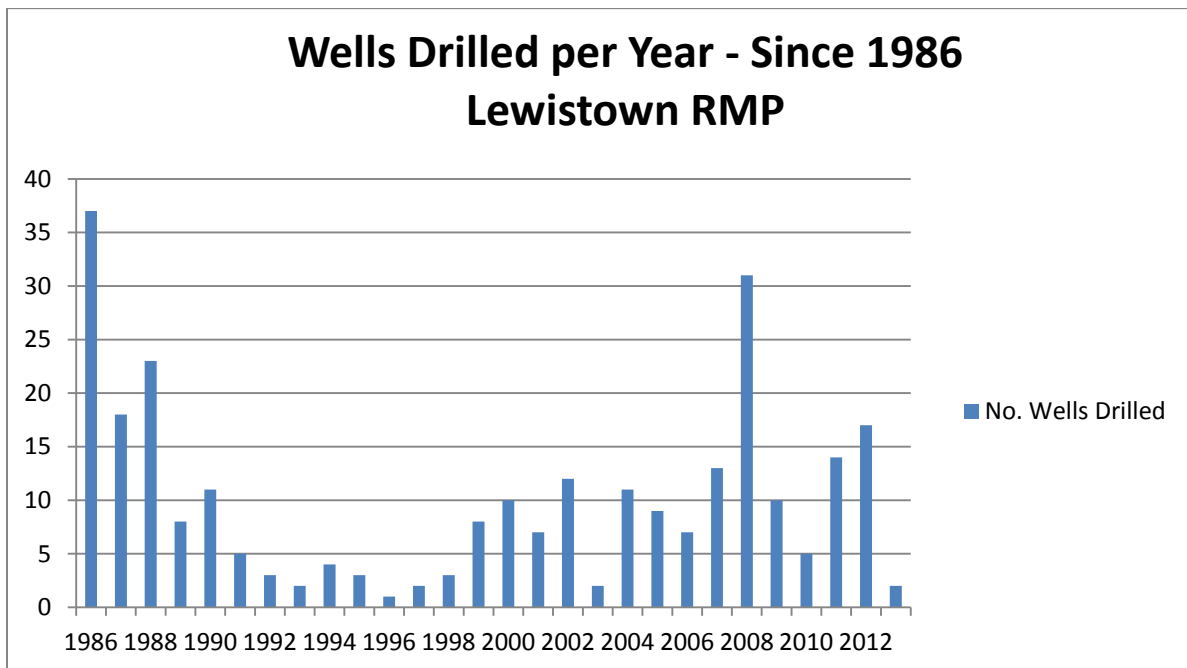


Figure 2-16

Total Number of Wells Drilled within the Jurisdiction of the Lewistown Field Office Since 1986



It is possible that more or less wells will be drilled in the future during the 20-year planning period than anticipated in this document if events occur that are unforeseen, unexpected, or impossible to predict at this time. Such unanticipated events may include new technological advancements, large changes in

oil and gas prices, large changes in global energy supply and demand patterns, and other global events such as war, oil embargos, etc.

A total of 3,966 wells have been drilled or spud within the Lewistown planning area through May 31, 2013 (IHS Energy Group, 2013). Approximately 9 percent of these wells were drilled on BLM-managed oil and gas lands.

When all well types and land ownerships are considered, 11.2 percent of all drilled or spud wells are still in an active status (3,966 wells), while the remainder have been abandoned or are in the process of being abandoned (IHS Energy Group, 2013 and Montana Board of Oil and Gas, 2013). Wells are abandoned because:

- They were “dry” - no hydrocarbons were encountered, or hydrocarbons were not present in economic quantities;
- They initially were capable of producing hydrocarbons, but they became uneconomic to produce at a later date; or
- Mechanical difficulties within a borehole prevented economic oil and gas production.

Appendix H is a map illustrating the drilling activity within the planning area. It shows that the greatest drilling activity has occurred in the southern half of Petroleum County, central Teton and Pondera Counties, and Fergus County. Even with thousands of wells drilled, many townships have received little or no drilling activity.

As of May 31, 2013, 869 wells of the original 3,966 wells spud were considered to be active in the Lewistown planning area. For the purpose of this planning document, an active well is defined as a well with an initial completion status of oil, gas, spud, temporarily abandoned, injection, gas storage, or service. All other wells are considered to be abandoned. The Lewistown RFD mentions that about two-thirds of the active wells lie in Pondera County and almost 98 percent lie in three of the nine counties. Chouteau and Fergus Counties each only contain about 2 percent of the total active wells in the planning area. Wells related to oil development (oil and injection well types) account for almost 7 percent of all active wells. Almost 98 percent of the active wells related to oil development are located in Pondera, Teton, and Petroleum Counties where there are few Bureau-managed oil and gas minerals (i.e., 996,767 acres or less than 8 percent of Bureau-managed oil and gas minerals are contained within this area). Major oil producing fields in these counties are Cat Creek, Pondera, Brady, and South Cut Bank.

The RFD also states that approximately 19 percent of all active well types are gas wells. The gas wells are more scattered within the Lewistown planning area (Appendix H) compared to those related to oil development. Four counties (Pondera, Teton, south Chouteau, and Fergus) account for all of the total active gas wells.

There are two active wells used as water source wells by the petroleum industry, and 34 wells are used to dispose of waste fluids associated with oil and gas development.

2.13.2.3 Forecast

With the continuation of current market projections indicating further growth and current market condition of elevated energy prices, the exploration, development, and extraction of leasable fluid minerals is expected to increase.

The Energy Information Administration (2014) (<http://www.eia.gov/analysis/projection-data.cfm>) estimates that over the next two decades:

- US energy demand will grow at an average annual rate of 0.24 percent per year (Table A2);
- Energy efficiency of the economy will increase at an average annual rate of 0.11 percent per year (Table A20);
- Future natural gas supply growth will depend on nonconventional domestic production, natural gas from Alaska, and liquefied natural gas imports;
- US oil imports will increase from 44.3 percent to 47.5 percent (Table A1);
- Price of oil and natural gas will be higher than in the past; and
- Carbon dioxide emissions will shrink at an average annual rate of 0.18 percent (Table A19).

The Energy Information Administration projections indicate that demand for natural gas will increase 0.88 percent per year for the next two decades. Further demands versus supply will be met by imports of foreign natural gas, primarily from Canada. In addition, further portions of the increase in domestic supply are projected to be met by growth in production from the Rocky Mountain, East Coast, and Texas regions.

Projected Oil and Gas Drilling Activity

The above projected increases in demand and in oil and gas prices indicate continued industry emphasis on maintaining oil supplies and increasing gas supplies in the Lewistown planning area. Much of the planning area gas supply growth is expected to come from production from reservoirs like those in Petroleum, Teton, and Pondera Counties. For the purpose of the Lewistown RMP, Table 5 of the Lewistown RFD displays the future projected annual drilling estimates of newly completed oil and gas wells and estimated future oil and gas production for all producing wells in the Lewistown planning area.

Drilling Rates

Figure 2-16 graphically illustrates the number of wells completed (producers and dry holes) per year in the Lewistown planning area from 1986 through 2013 (Montana Board of Oil and Gas Conservation, 2013). During the 28-year time period, activity levels have fluctuated, but the final 6 years (2007 through 2013) have remained relatively low. Based upon historical drilling during the past 20 years, it is anticipated that between 17 and 48 wells will be drilled per year during the 20-year planning period, with a most-likely estimate of about 20 wells drilled per year. It is further estimated that, out of the approximately 20 wells expected to be drilled per year, 2 wells will be drilled on federal mineral lands and 0-18 wells will be drilled per year on private and state mineral lands.

Table 2-55**Baseline Projections for Future Newly Producing Oil and Gas Wells and Production in the Lewistown Planning Area**

Year	Total Wells Spud	New Producing Oil Wells	New Producing Gas Wells	Total New Producing Wells	Oil Produced (bbls)	Gas Produced (mcf)
2014	18	4	2	6	9,000	70,000
2015	17	3	2	5	15,000	122,000
2016	27	5	3	8	25,000	199,000
2017	17	3	2	5	30,000	224,000
2018	33	6	3	9	41,000,	282,000
2019	41	8	4	12	56,000	364,000
2020	34	6	3	9	65,000	395,000
2021	48	9	5	14	80,000	493,000
2022	44	8	4	12	92,000	537,000
2023	39	7	4	11	101,000	576,000
2024	44	8	4	12	112,000	610,000
2025	43	8	4	12	122,000	641,000
2026	40	7	4	11	129,000	670,000
2027	36	7	3	10	136,000	660,000
2028	31	6	3	9	140,000	657,000
2029	39	7	4	11	147,000	693,000
2030	25	5	3	8	148,000	687,000
2031	12	3	2	5	146,000	651,000
2032	20	4	2	6	146,000	625,000
2033	25	5	3	8	148,000	642,000
Totals	633	119	64	183	1,885,000	9,798,000

2.13.3 Nonenergy Solid Leasable Minerals

Nonenergy solid leasable minerals are those minerals, other than coal and oil shale, which are leased under the Mineral Leasing Act of 1920 and not related to energy production. Nonenergy leasable minerals include, but are not limited to, phosphate and chlorides, sulfates, carbonates, borates, silicates, or nitrates of potassium and sodium. What are referred to as “hardrock minerals” also fall under the category of nonenergy leasable minerals. Hardrock minerals are the minerals or commodities that would usually qualify as locatable on public domain lands may only be obtained through mineral lease on acquired lands.

Indicators

The primary indicator of nonenergy leasable mineral resources is number of prospecting permits and leases within the planning area. Active permits and leases are a quantitative measure that indicates current use. In association with geologic occurrence, areas of past permits and leases can also be used to indicate development potential.

2.13.3.1 Current Level

Within the planning area, the BLM has issued 24 prospecting permits for nonenergy leasable minerals on acquired lands over the past 20 years. Generally, two to three prospecting permits are active at any given time but, as of July 2013, one prospecting permit is currently authorized. The primary minerals of interest for prospecting permits are diamonds and garnets.

2.13.3.2 Forecast

Future demand for nonenergy leasable minerals will likely increase over time in parts of Montana and the West, but this is not anticipated to result in an increase of activity in the planning area. The focus of the prospecting permits in the planning area has been garnets and diamonds, a commodity of constant demand in industrial use and gem markets. Though there has been continuous interest as indicated by the number of prospecting permits since the 1980s, none of these have been developed beyond exploration and into a lease. The level of prospecting is anticipated to stay the same.

2.13.3.3 Key Features

Several areas in Petroleum County have occurrences of ultramafic outcrops termed diatremes. These igneous intrusions originated at extreme depth with potassium-argon dating of similar outcrops of central Montana being dated between 46 to 52 million years ago (Hearn, 1979). These diatremes have chemical and mineralogical affinities similar, but not identical, to kimberlite deposits. The main importance in recognizing kimberlites is their association with diamond occurrences in other areas of the world. Earliest interest in the diatremes of central Montana was in the mid-1930s, but their mineral potential was not realized until the 1950s and 1960s. Since the mid-1980s, there has been a steady stream of small scale prospecting for commercial diamonds and gems along these outcrops in the planning area.

2.13.4 Locatable Minerals

Locatable minerals are those that are open to mining claim location under the General Mining Law of 1872, as amended (30 US Code [USC] 22-54 and 611-615). Locatable minerals include, but are not limited to, precious and base metals, precious gems, uranium, chemical grade limestone, chemical grade silica sand, and gypsum. Because of the wide variety of potentially locatable minerals, there is no

definitive list. Rather, minerals are considered locatable only if they constitute a valuable mineral under the definition of discovery, as outlined through case law.

Uncommon varieties of mineral materials (also known as salable minerals) such as pumice, rock, cinders, and bentonite are also regulated as locatable minerals. A determination that a variety is "uncommon" and subject to the General Mining Law is made by the BLM on a case-by-case basis.

In the case of acquired lands where public land under federal ownership was obtained through purchase, condemnation, gift, or exchange, solid minerals that would usually be locatable under public domain are subject to a leasing as described under Section 2.13.3.

Indicators

The primary indicator of locatable mineral resources is number of mining claims, notices, and plans of operations within the planning area. Mining claims, notices, and plans of operations are a quantitative measure that indicates current use. In association with geologic occurrence, areas of past activity can also be used to indicate development potential.

2.13.4.1 Current Level

Any area of public lands with minerals reserved by the federal government that is not withdrawn is open to locatable minerals exploration and mining. Within the planning area, there is no active exploration or mining of locatable minerals on public lands managed by the BLM (notices and plans of operations). However, favorable geologic occurrence, past mining, and adjacent private operations described in the following sections can be used as indicators for potential development. Mining claim location activity can also be considered as an indicator for potential development activity of locatable minerals. The table below presents an inventory of active mining claims by county within the planning area.

Table 2-56
Unpatented Mining Claims

County	Claim Type	Number of Claims	
		All Federal	BLM
Cascade	Lode	25	1
Fergus	Lode	93	93
	Placer	5	5
Judith Basin	Lode	38	1
	Placer	16	10
	Millsite	1	0
Meagher	Lode	345	0
	Placer	37	0
	Millsite	1	0
Petroleum	Lode	1	1

Source: BLM LR2000, July 2013.

Though the BLM manages unpatented mining claims on all federal lands, it does not manage the surface activity related to exploration and development of locatable minerals for other agencies. In the case of split estate where the surface is privately owned and the minerals have been reserved by the federal government, surface management defaults to the BLM.

2.13.4.2 Forecast

The locatable mineral deposits that have been most actively mined in the planning area are the gold and silver deposits associated with the plutonic island mountain ranges of the Judith, North Moccasin, and South Moccasin Mountains. The first gold discoveries for the area were in the late 1870s when the big bonanza miners of western Montana began to fan out to newer, unexplored areas. These first discoveries were small placer deposits that quickly played out, providing minor amounts in gold production. Lode mining soon followed as the prospectors sought mineralization at its source, and the first underground hardrock mines began to be developed. From this development, the Warm Springs and North Moccasin Mining Districts were established. The majority of the Fergus County mining claims shown in Table 2-56 are located in these two historic mining districts.

Within a few years, the Warm Springs Mining District (also known as the Maiden, Gilt Edge, or Gold Hill District) saw numerous mines and prospects being developed with several mills being erected to treat ore locally by cyanidation. This production continued steadily until its decline in 1912 and, after that, it saw sporadic activity until 1942 when all gold mining was halted by US War Production Board Order L-208. Though records are not reliable, it is estimated the district produced up to 635,000 ounces of gold in this time (Woodward, 1995). Between 1985 and 1991, gold production briefly resumed with about 34,000 ounces being produced from the Spotted Horse and Gies Mines. Only a small portion of access roads and facilities associated with these mines were on BLM land.

The North Moccasin Mining District (also known as the Kendall District) had a slower start than the Warm Springs District due to a more difficult to treat ore, so no lode production was reported prior to 1893 (Freeman, 1917). Improvements to the cyanidation process in 1900 allowed a more efficient recovery of gold, permitting the mines of the district to produce intermittently until 1923. Through the 1920s to the early 1930s, placer gold continued to also be produced from the western drainages of the North Moccasin Mountains. In total, production for the district between 1890 and 1947 was 450,000 ounces of gold and 31,445 ounces of silver (Robertson, 1950). From 1987 to 1996, the Kendall Mine operated as a large open pit, producing 9 million tons of ore that was processed by cyanide heap leaching to yield 300,000 ounces of gold and 135,000 ounces of silver.

The Judith Basin County portion of the Little Belt Mountains contains several mining districts but, due to their proximity to BLM land, only the Barker and Yogo areas are discussed. Placer gold was first discovered in 1860, along Yogo Gulch. Seventeen years later, one of Montana's larger silver-lead deposits was discovered in what eventually was called the Barker Mining District. The major production in this district was from the Block P Mine near Hughesville. This mine operated from 1915 to 1948 under various owners. This was an underground operation mining lead, zinc, silver, and gold ores. By 1948, it produced 405,852 tons of ore with an average grade of 0.05 ounces of gold per ton and 50.0 ounces of silver per ton. Since 1948, mining and development has been very sporadic (Robertson and Roby, 1951).

The Yogo District's history of production and ownership is also one that has been varied and sporadic. There was somewhat continuous production from the late 1800s to 1929. During that time, it is estimated that over 200,000 tons of ore was mined from three separate operations, utilizing both surface and underground methods that recovered about 13 million carats of sapphires. Records of sapphire production from 1929 to the early 1980s are currently not available, but it is thought that very little mining was conducted.

The economics of mining in the planning area will be driven by the relationship between commodity production costs and market price. Though more silver is often produced than gold, it is the relatively

high unit value of gold that will be critical in establishing the economic viability of mining. While production costs can be controlled or anticipated, through management and technology, the significant unknown factor will be the price of gold. The overall profitability of an operation, and hence the level of activity at the prospecting, exploration, and mining phases, for development of gold ore bodies will be closely related to the price of gold (Table 2-57).

The supply and demand for gold, and ultimately the price, is determined by several factors. On the supply side, production costs must be lower than price for firms to earn a profit. Relatively low-grade deposits, which were once uneconomical to mine, have become profitable resources to develop due to the emergence of new production techniques. Thus, supply has been increasing while the relative cost of production generally has declined. However, the profitability of these mining processes has increased the number of suppliers worldwide and made the market more competitive.

Table 2-57
Gold and Silver Prices (1992-2012)

Year	PPI* (Metals)	Gold (Unadjusted)	Gold (2012 \$)	5-yr. Avg. (Adjusted)	Silver (Unadjusted)	Silver (2012 \$)	5-yr. Avg. (Adjusted)
1992	1.192	\$343.82	\$634.28	-	\$3.95	\$7.29	-
1993	1.192	\$359.77	\$663.70	-	\$4.31	\$7.95	-
1994	1.248	\$384.00	\$676.62	-	\$5.28	\$9.30	-
1995	1.345	\$383.79	\$627.48	-	\$5.20	\$8.50	-
1996	1.31	\$387.81	\$650.99	\$650.61	\$5.20	\$8.73	\$8.35
1997	1.318	\$331.02	\$552.29	\$634.21	\$4.91	\$8.19	\$8.54
1998	1.278	\$294.24	\$506.29	\$602.73	\$5.55	\$9.55	\$8.86
1999	1.246	\$278.98	\$492.36	\$565.88	\$5.22	\$9.21	\$8.84
2000	1.281	\$279.11	\$479.13	\$536.21	\$4.95	\$8.50	\$8.84
2001	1.254	\$271.04	\$475.29	\$501.07	\$4.37	\$7.66	\$8.62
2002	1.259	\$309.73	\$540.98	\$498.81	\$4.60	\$8.03	\$8.59
2003	1.292	\$363.38	\$618.48	\$521.25	\$4.88	\$8.31	\$8.34
2004	1.496	\$409.72	\$602.26	\$543.23	\$6.67	\$9.80	\$8.46
2005	1.608	\$444.74	\$608.20	\$569.04	\$7.32	\$10.01	\$8.76
2006	1.816	\$603.46	\$730.73	\$620.13	\$11.55	\$13.99	\$10.03
2007	1.935	\$695.39	\$790.26	\$669.99	\$13.38	\$15.21	\$11.46
2008	2.13	\$871.96	\$900.21	\$726.33	\$14.99	\$15.48	\$12.90
2009	1.868	\$972.35	\$1,144.65	\$834.81	\$14.40	\$16.95	\$14.33
2010	2.076	\$1,224.53	\$1,297.08	\$972.59	\$20.19	\$21.39	\$16.60
2011	2.259	\$1,571.52	\$1,529.78	\$1,132.40	\$35.12	\$34.19	\$20.64
2012	2.199	\$1,668.98	\$1,668.98	\$1,308.14	\$31.15	\$31.15	\$23.83

* Annual Producer Price Indexes (PPI): US Bureau of Labor Statistics, 2013.

Gold and silver prices: <http://www.kitco.com>, 2013.

Factors influencing the demand for gold, both nationally and internationally, include the growth of disposable income, inflationary expectations, international stock market activity, the value of the US dollar relative to other currencies, and political events.

As shown in Table 2-57, the price of gold has had a rapid increase between 2006 and 2012. In this time, there has been increased national and international interest in gold development, as is the case with Montana. The general trend for Montana in this time has been reopening past developments related to old mines but, unlike the western portion of the state, central Montana does not benefit from being near previously in-place and permitted processing facilities. It would seem for this reason in combination with Montana law that bans open pit mining that utilizes cyanide leaching, gold and silver development remains uneconomical.

The primary market for bentonite is drilling muds and foundry application, so demand is tied closely with activity in these associated industries. But, when containing certain properties, bentonite can find a market in a wide range of applications in the food, medical, and construction industries. The distance from the source area to available markets is the primary limiting factor when meeting demand. Though there has been mining claims located in Petroleum County in the past, there has never been any bentonite mine development in the area.

2.13.4.3 Key Features

Based on the indicators described above, the areas with the highest levels of future mineral development potential are the alkalic igneous intrusive centers in the planning area, mainly the Judith, North Moccasin, and South Moccasin Mountains. These alkalic to alkali-calcic laccoliths, stocks, and intrusions dome upward and cut into the overlying sedimentary strata. Taking place during the late stages of igneous activity in the Late Cretaceous and early Paleogene periods, diverse hydrothermal mineralization types occurred along the breccias, diatremes, faults, and fractures associated with the intrusion (Woodward, 1995).

Gold mineralization ranges from igneous-hosted stockworks and breccia pipes (Moccasin Mountains and Gold Hill areas) to replacement zones in the flanking and upturned limestones (Gilt Edge and Kendall areas). The latter are mostly localized by intraformational solution breccias in the upper Madison Group. Gold mineralization occurs as auriferous pyrite, sylvanite, or in native form and is accompanied by varying amounts of silver, base metal, and telluride with quartz, fluorite, carbonate, and barite (Giles, 1982).

Gold placer deposits in the Judith and Moccasin Mountains are associated with the loose, unconsolidated sediments and gravel that have been eroded and reshaped by flowing water from the lode (in-situ mineralization) sources described above. Through the process of gravity separation, the denser and weather-resistant gold particles concentrate in streambeds.

The Little Belt Mountains are a broad northwest/southeast trending series of igneous uplifts forming one continuous mountain range. The majority of the intrusions have been described as domes of laccolithic origin with associated dikes and sills. The Barker Mining District contains the Dry Fork of Belt Creek and its tributaries west of the divide between Dry Wolf Creek, including the areas drained by Dry Fork's headwater branches of Otter and Arrow Creeks. Deposits of precious metals are found in the various igneous units and as irregular replacement deposits in the sedimentary rocks.

The Yogo District includes the areas south and east of the divide between Yogo and Running Wolf Creeks, as well as areas above the headwaters of the Middle Fork of the Judith River and as far south as the main divide along the southern border of the county. The geologic setting is similar to the Barker District, but Madison Limestone is the predominant rock type. For sapphires, a lamprhyre dike is the host rock for the disseminated sapphires. The ore is generally oxidized from the surface to a depth of 60 feet.

2.13.5 Salable Minerals

Salable minerals, also referred to as mineral materials, include common variety minerals such as sand, gravel, clays, borrow material, and building stone. Mineral materials are sold or permitted under the Mineral Materials Sale Act of 1947.

The BLM is authorized to sell mineral materials to the public at fair market value, using both competitive and noncompetitive sales. The BLM's policy is to make these materials available for the public and local government agencies whenever possible and wherever environmentally acceptable.

Competitive sales have a maximum initial contract term of 10 years, but there is no limitation on the quantity, and the BLM may issue contracts that can be renewed for additional 10-year terms.

Noncompetitive sales have a maximum contract term of 5 years, a limit of 200,000 cubic yards per contract and a maximum total quantity of 300,000 cubic yards for all contracts issued to any one entity in one state during a 12-month period.

The BLM offers mineral materials free of charge to state, county, or other government entities for use in public projects. There is no limit on the quantity of such disposal to government entities, but the permit has a maximum term of 10 years. Also, a limited amount may be provided free to nonprofit groups. Materials obtained free of charge cannot be bartered or sold.

The public can collect small quantities of petrified wood (25 pounds per day plus one piece, up to a maximum of 250 pounds per year) for free without a permit. Quantities in excess of these amounts require purchase at fair market value under a sales contract or by a free use permit.

Indicators

The primary indicator of salable mineral resources is number of sales and permits within the planning area. Active sales and permits are a quantitative measure that indicates current use. In association with geologic occurrence, areas of past exploration, sales, and permits can also be used to indicate development potential.

2.13.5.1 Current Condition

Within the planning area, the BLM has issued 21 mineral material permits and sales in the past 20 years. The majority of mineral material permits have been free use permits issued to the county or state governments for road construction or maintenance.

2.13.5.2 Forecast

Much of the surface geology in the planning area is dominated by late Cretaceous shale and sandstone layers, deposited during transgression and regression of the inland sea. These rocks are source to building materials and clays. In more recent times, erosion has dissected the landscape to its present form. Alluvial material derived from erosion of exposed bedrock or reworking of glacial deposits is the primary source of sand and gravel.

Paleogene gravels make good material for road surfacing and construction projects. Most deposits contain adequate fines for roadwork, though some may require crushing. Some of the Quaternary terrace deposits consist almost entirely of limestone pebbles and cobbles and may not be as durable as deposits containing more igneous materials. The deposits of glacial origin contain a large percentage of igneous material. The amount of fines is variable, depending on the type of energy environment from

which the gravel was deposited. The till or moraine material has a high clay content and makes a good low permeability liner for ponds and canals.

Extensive deposits of bentonitic shale occur throughout the planning area. This material is also useful as a low permeability liner in the construction of reservoirs or irrigations canals.

Mineral material development is primarily for sand and gravel sources needed for road surfacing. Pits are usually located within 20 miles of the particular project and generally require little for access development. Other mineral material activity is related to specific construction jobs such as: reservoirs, canals, or other types of development; riprap for irrigation or retention structures; aggregate for concrete mix; and building stone for general use. Virtually all this material is used in the planning area, and some building stone may be economic to transport for greater distances if at a high enough value.

2.13.5.3 Key Features

Sand and gravel, as construction aggregate, is an extremely important resource. The extraction of the resource varies directly with the amount of development nearby – road building and maintenance and urban development – as sand and gravel is necessary for that infrastructure even more so than other resources; however, the proximity of both transportation and markets are key elements in the demand.

2.14 LIVESTOCK GRAZING

2.14.1 Current Level

Most of the BLM lands within the planning area are located within grazing allotment boundaries which are managed in accordance with AMPs or watershed plans (see Grazing Allotments Map 9). There are some small, isolated parcels located outside of existing allotment boundaries that are not permitted for livestock use and there are some parcels within existing allotment boundaries that are unallocated. There are 14,630 acres closed to livestock grazing under existing RMP decisions and 639,395 acres which remain open, although not all 639,025 acres are currently allocated.

Allotments are an outgrowth of the grazing districts and permitting system established to manage livestock grazing in these districts by the 1934 Taylor Grazing Act. The livestock that graze on LFO-managed lands are primarily cattle, but several permits and leases include sheep and horses. The relative numbers of these kinds of livestock have not varied much over the last 10 years.

There are 605 allotments in the planning area. In addition to public land, these allotments may contain other lands (e.g., FS, state, and private). There are 540 permits/leases authorizing grazing on these allotments. Total permitted use is 125,411 AUMs with 631 AUMs in suspension and 2,971 AUMs available but unused. Total permitted numbers change frequently due to conversions of the class of livestock and changes in allotment or livestock management.

There are 350 Section 3 permits and 190 Section 15 leases. Section 3 allotments are located within Taylor grazing districts, as provided in the Taylor Grazing Act. Section 15 allotments are located outside of grazing districts. Section 15 leases account for 12,594 AUMs of the total 126,042 AUMs. Table 2-58 provides a summary of AUMs by county.

Table 2-58
Summary of AUMs by County and Preference Code in the Planning Area
(Calendar Year 2013)

Number of Permitted and Suspended AUMs by County		Section 3	Section 15	County Total
Cascade	Sum of County Permitted	0	1,816	1,816
	Sum of County Suspended	0	0	0
Chouteau	Sum of County Permitted	0	5,155	5,155
	Sum of County Suspended	0	0	0
Fergus	Sum of County Permitted	50,661	1,618	52,279
	Sum of County Suspended	141	0	141
Garfield	Sum of County Permitted	395.5	0	395.5
	Sum of County Suspended	0	0	0
Judith Basin	Sum of County Permitted	0	981	981
	Sum of County Suspended	0	0	0
Lewis and Clark	Sum of County Permitted	0	47	47
	Sum of County Suspended	0	0	0
Meagher	Sum of County Permitted	0	1,222	1,222
	Sum of County Suspended	0	0	0
Petroleum	Sum of County Permitted	61,916.5	0	61,916.5
	Sum of County Suspended	334	0	334
Pondera	Sum of County Permitted	0	156	156
	Sum of County Suspended	0	0	0
Powell	Sum of County Permitted	0	51	51
	Sum of County Suspended	0	0	0
Teton	Sum of County Permitted	0	1,392	1,392
	Sum of County Suspended	0	156	156
Total Sum of County Permitted		112,973	12,438	125,411
Total Sum of County Suspended		475	156	631
Grand Total		113,448	12,594	126,042

* Numbers may vary due to fluctuations in permitted AUMS in calendar year and query parameters.

2.14.2 Forecast

Trends in livestock grazing reflect changes in livestock species, in permittees and their perspectives, in permitted use or season-of-use, in number and types of range improvements, as well as grazing systems. The absentee ownership of the base property associated with many of the allotments has increased, as has the number of permittees that do not rely on livestock grazing for their primary source of income. Changes in the types of permittees that run livestock in the planning area have resulted in diversification of perspectives. Some permittees have shifted the focus of their management to wildlife habitat improvement and recreation as an alternative source of income.

Changes in permitted use or season-of-use are in response to changes in rangeland condition, socio-economics, and other factors. The condition of the land is due to a variety of factors, such as climate, wildlife, livestock, oil and gas development, recreational use, and increased population. Increased development and recreational demands are competing for resources that could limit livestock grazing.

If rangeland condition deteriorates, the BLM has the ability to reduce the number of permitted AUMs, to manage plant communities that provide forage and browse through vegetation treatments, to change the season-of-use, to require deferment and pasture rotations, and to install range improvements, such as fences, water pipelines, spring developments, and reservoirs. These range improvements often enable more intensive grazing systems and encourage better livestock distribution and grazing utilization, but they also require more management on the part of the grazing permittee. Range improvement and permittee involvement may become more crucial to sustain future resource demands. The BLM's traditional goal in managing livestock grazing has been to provide sustainable habitat for livestock and other animals. This is likely to remain the primary focus of the BLM's management of livestock grazing.

Urbanization of rural areas in the planning area has also caused conflicts with livestock grazing. New landowners are often unfamiliar with state livestock laws and associated fencing requirements. Conflicts develop when livestock authorized on public land drift onto private land. This is largely the result of public/private land boundaries that are not fenced, are poorly fenced or where fences have been poorly maintained. It is BLM policy not to fence, or be responsible for fence maintenance, on boundaries between private and public land. In most instances the BLM has determined that it is not in the public interest to construct these fences largely because it would not be practical or economical. Rural-urban interface conflicts have often forced ranchers to seek other areas for grazing. Livestock operations near more urban areas in the planning area such as Lewistown, White Sulphur Springs, and Great Falls have consequently diminished, as has livestock use on public land surrounding these areas.

2.14.3 Key Features

Standards for Rangeland Health and Guidelines for Grazing Management

The *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (BLM, 1997) addressed resource conditions for soils, riparian systems, upland vegetation, wildlife habitat, T&E species, and air and water quality (BLM, 1997). The S&Gs are implemented through land health assessments, standards conformance review determination documents, EAs, permit renewals, and other permit changes. These standards not only pertain to impacts associated with livestock grazing, but also to other rangeland impacts from activities such as recreation, wildlife grazing, and wild horse management. Sustainable livestock grazing and desired rangeland condition requires the collective management of forage, water, soil, and livestock by the BLM and the livestock owners and operators. An interdisciplinary approach ensures effective management of the multiple resource values and uses in the planning area.

Management practices for livestock grazing have been focused on achieving land health standards and meeting objectives for other resources (for example, vegetation and soils) in the allotments. This has been accomplished by conformance with the guidelines for livestock management, such as changing the duration of grazing use, season-of-use, reducing animal units, and improving grazing distribution. Reducing the duration of grazing use and improving livestock distribution are generally the keys to meeting rangeland objectives, particularly those associated with riparian areas. Grazing management has been improved by a variety of actions, such as adjustments in grazing permits (including the addition of terms and conditions designed to maintain or improve riparian zones and wetlands, utilization and trampling limits, herding and riding requirements, and placing salt and supplemental feed away from riparian zones), construction of water developments and pasture fencing, and ensuring maintenance of range improvements and compliance of grazing permits.

Terms and conditions of permits and leases are specific requirements determined to be appropriate to achieve management and resource condition objectives or to ensure conformance with the rangeland health standards. They are determined by an interdisciplinary team in consultation with permittees and the interested public for each individual allotment. Terms and conditions are a tool to achieve resource conditions or to conform with standards on the public lands. They may be modified if monitoring data shows those terms and conditions currently being applied are not achieving desired results.

2.15 RECREATION AND VISITOR SERVICES

2.15.1 Current Level

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) process identifies recreation opportunities based on the area's setting and activities. Public lands in the LFO contain four ROS classes: semi-primitive nonmotorized (SPNM), semi-primitive motorized (SPM), roaded-natural (RN), and rural (R). Natural resource recreational settings are indicators of the type and quality of recreational experience available in a given area.

Semi-primitive nonmotorized opportunities are defined by the experience of solitude in natural environments and nonmotorized activities. The types of activities associated with this class including camping, hiking, sightseeing, nature study, hunting, horseback riding, and fishing. Areas containing these types of opportunities include Square Butte WSA, North Fork of Sun River WSA, and the Rocky Mountain Front ONAs.

Semi-primitive motorized opportunities are defined by the ability to use motorized equipment while in a natural environment. The types of activities associated with this class include OHV use, sightseeing, hunting, and nature study. Most of the planning area is characterized by this opportunity setting type.

Roaded-natural opportunities are defined by an affiliation with others in an isolated environment. The types of activities associated with this class include picnicking, rock collecting, hunting, driving for pleasure, competitive activities, and bicycling. These activities occur mainly along gravel and dirt roads, but can also exist along some paved roads.

Table 2-59 describes the different ROS classes in more detail.

Table 2-59
Recreation Opportunity Spectrum (ROS) Classes

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Primitive	Opportunity for isolation from the sights and sounds of man, to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.	Area is characterized by essentially unmodified, natural environment of fairly large size. Concentration of users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of man-induced restrictions and controls. Only facilities essential for resource protection are used. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.	Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking, hunting (big game, small game, upland birds, waterfowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (nonmotorized craft).
Semi-primitive Nonmotorized	Some opportunity for isolation from the sights and sounds of man, but not as important as for primitive opportunities. Opportunity to have a high degree of	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. Onsite controls and	Camping, hiking, climbing, enjoying scenery or natural features, nature study, photography, spelunking,

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
	interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.	restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not permitted.	hunting (big game, small game, upland birds, waterfowl), ski touring and snowshoeing, swimming, diving (skin and scuba), fishing, canoeing, sailing, and river running (nonmotorized craft).
Semi-primitive Motorized	Some opportunity for isolation from the sights and sounds of man, but not as important as for primitive opportunities. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Explicit opportunity to use motorized equipment while in the area.	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low, but there is often evidence of other area users. Onsite controls and restrictions may be present, but are subtle. Facilities are provided for the protection of resource values and safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is permitted.	All activities listed previously, plus the following: ORV use (4WD, dune buggy, dirt bike, snowmobile, power boating).
Roaded-Natural	About equal opportunities for affiliation with other user groups and for isolation from the sights and sounds of man. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important except in specific challenging activities. Practice of outdoor skills may be important. Opportunities for both motorized and nonmotorized recreation are present.	Area is characterized by a generally natural environment with moderate evidence of the sights and sounds of man. Resource modification and utilization practices are evident, but harmonize with the natural environment. Concentration of users is low to moderate with facilities sometimes provided for group activity. Onsite controls and restrictions offer a sense of security. Rustic facilities are provided for user convenience as well as for safety and resource protection. Conventional motorized use is provided for in construction standards and design of facilities.	All activities listed previously plus the following: picnicking, rock collecting, wood gathering, auto touring, downhill skiing, snow play, ice skating, water skiing and other water sports, hang gliding, interpretive use, rustic resorts, and organized camps.
Rural	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are generally more important than the natural setting. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant, except in those activities involving challenge and risk.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are obvious. Sights and sounds of man are readily evident, and the concentration of users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for specific activities. Developed sites, roads, and trails, are designed for moderate to high use. Moderate densities are provided far away from developed sites. Facilities for intensive motorized use are available.	All activities listed previously, plus the following: competitive games, spectator sports, bicycling, jogging, outdoor concerts, and modern resorts.
Urban	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. Experiencing the natural environment and the use of outdoor skills are largely unimportant.	Area is characterized by a highly modified environment, although the background may have natural elements. Vegetation is often exotic and manicured. Soil may be protected by surfacing. Sights and sounds of man, onsite, predominate. Large numbers of users can be expected. Modern facilities are provided for the use and convenience of large numbers of people. Controls and restrictions are obvious and numerous. Facilities for high intensity motor use and parking are present with forms of mass transit often available.	All activities listed previously.

Limits of Acceptable Change

A widely used management-monitoring technique in recreation is limits of acceptable change (LAC). The LAC utilizes indicators with prescriptive standards based on the recreation objectives to define acceptable limits. If the standards (acceptable limits) are exceeded, the managing partners then make predetermined management changes that will bring concerns such as: (1) visitor impacts to natural/cultural resources; (2) the physical, social and administrative natural resource recreation setting prescriptions; or (3) the visitor's attainment of recreation outcomes back within acceptable standards.

Visitor Impacts

Impacts to visitor use is necessary for managing recreational use, identifying trends, projecting and prioritizing future recreation management, identifying natural resource recreation settings, carrying capacities, and LAC. Visitor use is impacted by closing and opening areas. Impacts are measured by acres of land not available to recreationists.

Approximately 166,000 visits occur on 654,025 acres of BLM lands in the planning area each year based on 2012 data from the Recreation Management Information System (RMIS). Primary recreational activities include big game hunting, upland bird hunting, waterfowl hunting, hiking, camping, fishing, rafting, backpacking, picnicking, wildlife and landscape viewing, OHV riding, driving for pleasure, horseback riding, mountain biking, and organized group events. For the Lewistown FO, the most popular activities are hunting, driving for pleasure, camping, and fishing.

These diverse recreation uses occur in both dispersed and concentrated recreational settings and vary from primitive to developed opportunities. Travel preferences are also variable as recreationists seek both nonmotorized and motorized opportunities. The RMIS reports indicate that most recreation activity in the planning area is associated with dispersed land-based use.

Table 2-60

Recreation Sites within the Planning Area

Site	County	Facilities						Recreation Opportunities							
		Fees	Camping		Toilets	Picnic Area	Boat Launch	Handicap Access	Boating	Fishing	Hiking	Horseback Riding	Hunting	Mountain Biking	OHV
			Stay Limit (Days)	Units											
Developed Recreation Sites															
Ear Mountain TH	Teton	no	0		1	✓					✓	✓		✓	
Judith Peak Scenic Outlook	Fergus	no	16								✓				✓
Limekiln Canyon	Fergus	no	16		1			✓			✓	✓	✓	✓	
Lowry Bridge	Chouteau	no	3	4	1	✓	✓		✓	✓	✓		✓		
Payola Reservoir	Petroleum	no	16			✓			✓	✓			✓		
Tunnel Lake	Teton	no	16			✓	✓		✓	✓					
Uhlhorn TH	Fergus	no	16		1	✓		✓			✓				
Undeveloped Recreation Sites															
Acid Shale Pine Forest ACEC	Petroleum	no	16								✓		✓		
Alex Camp	Petroleum	no	16										✓		
Carl's Camp	Petroleum	no	16										✓		
Chain Buttes BMA	Petroleum	no	16										✓		✓
Collar Peak	Fergus	no	16								✓				
Drag Reservoir	Petroleum	no	16							✓			✓		
Dry Blood Reservoir	Petroleum	no	16							✓			✓		
East Indian Buttes BMA	Fergus	no	16										✓		✓
Fritzner Reservoir	Fergus	no	16										✓		
Jakes Reservoir	Fergus	no	16							✓			✓		
Lower Dry Wolf Reservoir	Fergus	no	16							✓			✓		
Mauland Reservoir	Fergus	no	16										✓		
Red Mountain	Fergus	no	16			✓					✓		✓		
South Fork Dry Blood Reservoir	Petroleum	no	16							✓			✓		
Square Butte WSA	Chouteau	no	16								✓		✓		
Upper Dry Wolf Reservoir	Fergus	no	16								✓		✓		
Vogel/Box Elder	Petroleum	no	16							✓	✓		✓		

Special Recreation Management Areas (SRMAs)

A SRMA designation intensifies management of areas where outdoor recreation is a high priority. It helps direct recreation program priorities toward areas with high resource values, elevated public concern, or significant amounts of recreational activity. Areas with a SRMA designation can be expected to see investments in recreation facilities and visitor services aimed at reducing resource damage and mitigating user conflicts. Depending on the recreation setting chosen and accompanying level of recreation management zone(s), the level of management objectives and administrative activities could

vary from intense to low for each SRMA. Implementation-level plans are completed for each SRMA to fully describe management actions and objectives.

The SRMAs are areas identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific “structured” recreation opportunities based on outcome-focused management (OFM). The *BLM’s Priorities for Recreation and Visitor Services Workplan* (Purple Book) (BLM, 2003b) incorporates the OFM approach as the principal method to establish a relationship between benefits desired by recreationists and the activities and setting (physical, social, and managerial) characteristics that may facilitate realization of those benefits.

A OFM is the application of recreation resources management which focuses on the positive or beneficial outcomes derived from engaging in recreational activities, rather than just on the recreation activities themselves. The OFM provides the conceptual recreation framework to view, plan, and collaboratively deliver recreation services as a means to a larger end - outcomes that benefit individuals, communities, economies, and the environment. It is a framework for delivering benefits from public lands recreation to the American people and their communities.

The *JVP RMP* identified the following SRMAs in planning area:

- Judith Mountains – This SRMA provides picnicking, scenic viewing, hiking, driving for pleasure, and caving opportunities.
- Judith River – This SRMA provides nonmotorized boating, hunting, fishing, scenic and wildlife viewing, and camping opportunities.
- Snowy Mountains – This SRMA provides fishing, hunting, sightseeing, hiking, and picnicking opportunities.

Extensive Recreation Management Areas (ERMAs)

As stated in BLM Manual 8320 - Planning for Recreation and Visitor Services, ERMAs are administrative units that require specific management consideration in order to address recreation use, demand or recreation and visitor service (R&VS) program investments. The ERMA is managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. Management of ERMAs is commensurate with the management of other resources and resource uses. While generally unnecessary, ERMAs may be subdivided into recreation management zones (RMZ) to ensure R&VS are managed commensurate with the management of other resources and resource uses.

The following ERMAs are in the *JVP RMP* planning area:

- Box Elder/Vogel Reservoir
- Crooked Creek Reservoir
- Drag Creek Reservoir
- Dry Blood Reservoir
- Fritzner Reservoir
- Holland Reservoir
- Jakes Reservoir
- Lower Dry Wolf Reservoir
- Mauland Reservoir
- Payola Reservoir
- South Fork Dry Blood Reservoir
- Upper Dry Wolf Reservoir

Public Lands Not Designated as Recreation Management Areas (LNDs)

The LNDs are all lands not established as a SRMA or ERMA. Public lands that are not designated as recreation management areas (RMAs) are managed to meet basic R&VS and resource stewardship needs. Recreation is not emphasized; however, recreation activities may occur except on those lands closed to public use. The R&VSs are managed to allow recreation uses that are not in conflict with the primary uses of these lands (Manual 8320 - Planning for Recreation and Visitor Services, BLM, 2011).

Special Recreation Permits (SRPs)

The field office in the planning area has an active SRP program; administering approximately 15 SRPs per year for outfitters, activities, and events. Typical activities and events include: outfitting and guiding for hunting, fishing, horseback rides, helicopter shuttle, and a hike/run/mountain bike event. The LFO collects approximately \$10,000 per year in SRP fees; the LFO spends this revenue on visitor services, maintenance, monitoring, and law enforcement.

Outfitted guided hunting trips are the most popular SRP activity in the LFO. The outfitters are widely dispersed over several hunting areas, and authorized activities take place during different times and places throughout the LFO. All complaints involving SRP holders are fully investigated, and permits can be revoked due to noncompliance. The Montana Board of Outfitters has been established so as to maintain the integrity of all hunting outfitting activities across the State of Montana by working closely with all of the agencies in permitting new outfitters, monitoring, and conflict resolution.

Outfitting guides and SRP permittees not related to guided hunts both act as an economic factor in the local communities, outsource of land stewardship, and act as another medium in assisting the BLM to manage for beneficial outcomes. The SRP holders provide for a wide variety of recreational opportunities in areas that may be very difficult to access due to private lands blocking off public access, transportation needs, and local knowledge of the area. The SRPs can provide for unique niches that are needed in the communities, and provide for a service that is beneficial to the local community, as well as regionwide.

2.15.2 Forecast

Continuation of the current management situation would result in impacts similar to those seen since the enactment of the current RMPs. Impact levels are expected to increase paralleling recreation use trends.

Indirect effects from other entities' actions outside BLM jurisdiction are having an impact on the BLM's recreational goals and objectives. Urban sprawl, subdivision development, and house (ranchettes) construction on private lands intermingled with BLM-administrated lands are creating a variety of issues which affect recreation management. Such issues include newly restricted access, increased and unregulated public access, alteration of natural resource recreation settings, impaired natural settings and scenic quality, and impacts on visitors' goals by altered recreational opportunities, experiences, and benefits.

2.15.3 Key Features

Key features include ACECs, ONAs, WSAs, SRMAs, ERMA, developed recreation sites, campgrounds, trailheads, river access, and undeveloped or dispersed recreation areas.

2.16 TRAVEL, TRANSPORTATION MANAGEMENT, AND ACCESS

2.16.1 Comprehensive Trails and Travel Management

Travel management involves the infrastructure and legal authority to provide people the opportunity to access and use specific public lands within the planning area. The BLM's travel management program includes providing means for legal access for the development and maintenance of various transportation facilities and nonmotorized trails. The travel and transportation network on public lands is a vital link that enables use and management of these lands. Without a viable transportation network, use and enjoyment of the public lands could not occur. Motor vehicle use has increased and is an issue of concern to the BLM.

The transportation network in the LFO consists of federal and state highways, county roads, as well as roads built to facilitate industrial development, and the many nonmotorized trail systems. There is also an extensive network of official BLM roads that range from ditched and crowned gravel roads that are regularly maintained to an extensive array of unofficial roads and vehicle routes which were never formally constructed and which rarely receive maintenance. Many are "two-track" vehicle trails that were created and are maintained simply by the passage of motor vehicles.

Travel and transportation are an integral part of virtually every activity that occurs on BLM-administered public lands. Recreation, management of livestock, wildlife, commodity resources, rights-of-way, access to private inholdings, maintenance of electronic sites, and the day-to-day management and monitoring of the LFO all rely on effective travel management planning. Comprehensive trails and travel management is the proactive management of public access, natural resources, and regulatory needs to ensure that all aspects of road and trail system planning and management are considered. This includes resource management, road and trail design, maintenance, and recreation and nonrecreational uses of the roads and trails.

In this context, travel activities incorporate access needs and the effects of all forms of travel, both motorized and non-motorized. Comprehensive trails and travel planning means providing clear and specific direction on the proper levels of land and water access for all modes of travel. Travel management objectives serve as the foundation for appropriate travel and access prescriptions.

Federal Regulations 43 CFR §8342.1 designation criteria states that: *The authorized officer shall designate all public lands as either open, limited, or closed to off-road vehicles. All designations shall be based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands.*

National guidance emphasizes that the BLM should be proactive in seeking travel management solutions that conserve natural resources while providing for ample recreation opportunities (BLM, 2007).

The BLM released the current version of the Land Use Planning Handbook (H-1601-1) in March 2005. Guidance on determining OHV designations during the planning process was incorporated into the Recreation Section (Appendix C, Section II C). As field offices implemented the guidance for RMP development, revision, or amendment, they identified a need to clarify how to implement the guidance in the Recreation Section and introduce refinements to the existing process. Handbook 8342-1 (2011) emphasized policy and provides clarification and additional guidance for travel management decisions that will be part of RMP planning.

Modes of Travel

Visitors to public lands use roads and trails for a variety of recreational activities that involve various modes of travel. Motorized travel in the planning area ranges from standard passenger vehicles driving on maintained roads to OHVs operating on primitive roads and trails. The OHVs include off-road motorcycles, all-terrain vehicles, utility-terrain vehicles, jeeps, specialized 4x4 trucks, and snowmobiles. Mountain bikes are the predominant mechanized vehicle, while other modes of travel include hiking, boating, horseback riding, cross-country skiing, and snowshoeing. The type and amount of use and the location of roads and trails influence physical, social, and administrative recreation setting and the overall quality of the recreation experience.

History of Existing Route System

Some roads within the planning area were constructed to create access to public land improvements and projects for timber/vegetation management, gas and mineral development, range management, and various ROWs. Some of these roads are used by permittees to maintain improvements, such as livestock or wildlife ponds or fences. Numerous roads were not necessarily intended to be left behind or open for recreational use, but have become popular routes for visitors engaged in mechanized/motorized recreation activities. The majority of mechanized and motorized routes were created or pioneered by public land users. Open travel designations that permit cross-country mechanized and motorized use, high levels of use, and improvements in vehicle technology have allowed public land users to gain access to and through more terrain. Many routes are maintained primarily by the repeated passage of vehicles. These user-created routes are often rutted and eroded.

Travel Designations

The BLM is required to establish OHV management areas for all public lands. Areas must be classified as Open, Limited, or Closed to motorized travel activities. For legislative purposes, 42 CFR §8340.0-5 defines an OHV as “any motorized vehicle capable of or designated for, travel on or immediately over land, water, or other terrain.” The 2003 *Record of Decision: Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota and South Dakota* (BLM, 2003) stated that certain authorized vehicles were excluded from this definition including nonamphibious, registered motorboats; any military, fire, emergency, or law enforcement vehicles while being used for emergency purposes; vehicles whose use is expressly authorized by the authorized officer, or otherwise officially approved; vehicles in official use; and any combat or combat support vehicle when used in times of national defense emergencies. The national objectives for OHV management are to provide for OHV use while protecting natural resources, promoting public safety, and minimizing conflicts among the various users of public lands.

During the early 1980s, in response to Presidential Executive Orders 11644 and 11989, the BLM began assigning all public lands one of three OHV categories. The designations are defined as follows:

- **Open** - Available for OHV travel without restriction, based on an analysis determining that there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel.
- **Limited** - OHV travel is limited to designated or existing roads and trails in order to protect resources. Restrictions may include the number or types of vehicles, time, season of use, use of existing roads and trails only, use of designated roads or trails, or licensed use only. The BLM may also impose other restrictions to protect resources.
- **Closed** - OHV travel is not allowed in areas designated as closed. Areas are closed in order to protect resources, ensure visitor safety, or reduce user conflicts.

Transportation Facilities

The BLM transportation system represents one of the most critical aspects in effectively managing public lands. It provides public access and the infrastructure that supports uses ranging from recreation to commercial activity on public lands under BLM jurisdiction. The following sections will focus more on roads; however, nonmotorized trails are an important part of transportation and access and will be a crucial part of the travel and transportation planning which will be deferred to after the RMP.

Federal, State, and County Roads

A network of federal, state, and county roads provides access throughout the planning area. Numerous highways bisect the area. Traffic volume on the road network is highly variable. The highest volume counts are found on major roadways in or near the largest communities. Interstate 15 and state highways (200, 191, 80, 12 87, 81, and 89) carry the largest traffic volumes, followed by county roads.

Bureau of Land Management (BLM) Roads

The BLM roads provide public and administrative (agency and permittee/lessee) access to public lands, through public lands, and to inholdings of private land within the planning area. Reasonable administrative access is made available to the public for valid uses, such as mining claims, mineral leases, livestock grazing, and recreation. Most use of BLM roads would be described as casual.

Transportation planning is related to travel management. Travel management is the identification, through planning, of areas where foot, pack stock, and mechanized and motorized vehicle travel is appropriate, restricted, or not allowed, depending on resource objectives and use considerations.

Road System Maintenance

The BLM maintains roads under standards set forth in BLM 9100 series manuals as well as RMPs. Road maintenance provides for resource protection, accommodation of users, and protection of the public's investment. The BLM road maintenance levels are described in Table 2-61.

Road system maintenance has focused on maintaining major access roads, which generally receive most of the traffic volume. The BLM engineering office annually maintains about 100 to 150 miles of road within the planning area, depending on road conditions and funding availability. Road maintenance generally consists of blading or grading, and is usually performed in the summer or fall. Additional corrective maintenance or water drainage work (such as installation of culverts, drains, or other water management devices) is performed as needed, such as after periods of heavy rainfall. Snow is typically not removed.

Table 2-61
BLM Road Maintenance Levels

Level	Description
Level 1	Assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system.
Level 2	Assigned to roads where the management objectives require the road to be opened for limited administrative traffic. Typically, these roads are passable by high clearance vehicles.

Level	Description
Level 3	Assigned to roads where management objectives require the road to be open seasonally or year round for commercial, recreational, or administrative access. Typically, these roads are natural or aggregate surfaced but may include low use bituminous surfaced road. These roads have a defined cross section with drainage structures (e.g., rolling dips, culverts, or ditches). These roads may be negotiated by passenger cars traveling at prudent speeds. User comfort and convenience are not considered a high priority.
Level 4	Assigned to roads where management objectives require them to be open all year (except when closed or access is limited due to snow conditions) and which connect major administrative features (such as recreational sites, local road systems, and administrative sites) to county, state, or federal roads. Typically, these roads are single or double lane, aggregate or bituminous surface, with a higher volume of commercial and recreational traffic than administrative traffic.
Level 5	Assigned to roads where management objectives require the road to be open all year and are the highest traffic volume roads of the transportation system.

Functional Road Classification Types for BLM System Roads

In accordance with BLM Manual 9113 (Roads), roads on BLM lands are classified as collector, local, or temporary, based upon the amount of traffic movement. Collector roads (Level 4 or 5) generally provide access to large land tracts and are the major access routes into developed areas with relatively high average daily traffic rates. They usually connect with, or are extensions of, public road systems and are operated to support long-term land uses. Local roads (Level 4 or 3) normally serve a smaller area and have lower traffic volumes than collector roads. They connect with collectors or public road systems. In mountainous terrain, local roads may be single lane with turnouts. Resource roads (Level 2) generally are point access or spur roads that connect with local or collector roads and carry low traffic volumes.

Table 2-62
BLM Road Type Descriptions

Road Type	Level	Description
Collector Roads	4 or 5	These BLM roads normally provide primary access to large blocks of land and connect with or are extensions of a public road system. They accommodate mixed traffic and serve many uses. They generally receive the highest volume of traffic of all roads in the BLM road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the BLM.
Local Roads	3 or 4	These BLM roads normally serve a smaller area than collectors serve and connect to collectors or public road systems. Local roads receive lower volume, carry fewer traffic types, and generally serve fewer users. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by terrain, may be single-lane roads with turnouts. Environmental impacts are reduced because steeper grades, sharper curves, and lower design speeds than would be permissible on collector roads are allowable.
Resource Roads	2	These BLM roads are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing Bureau costs with minimal consideration for user cost, comfort, or travel time.

2.16.1.1 Current Level

Primary factors influencing the current state of travel management within the planning area include:

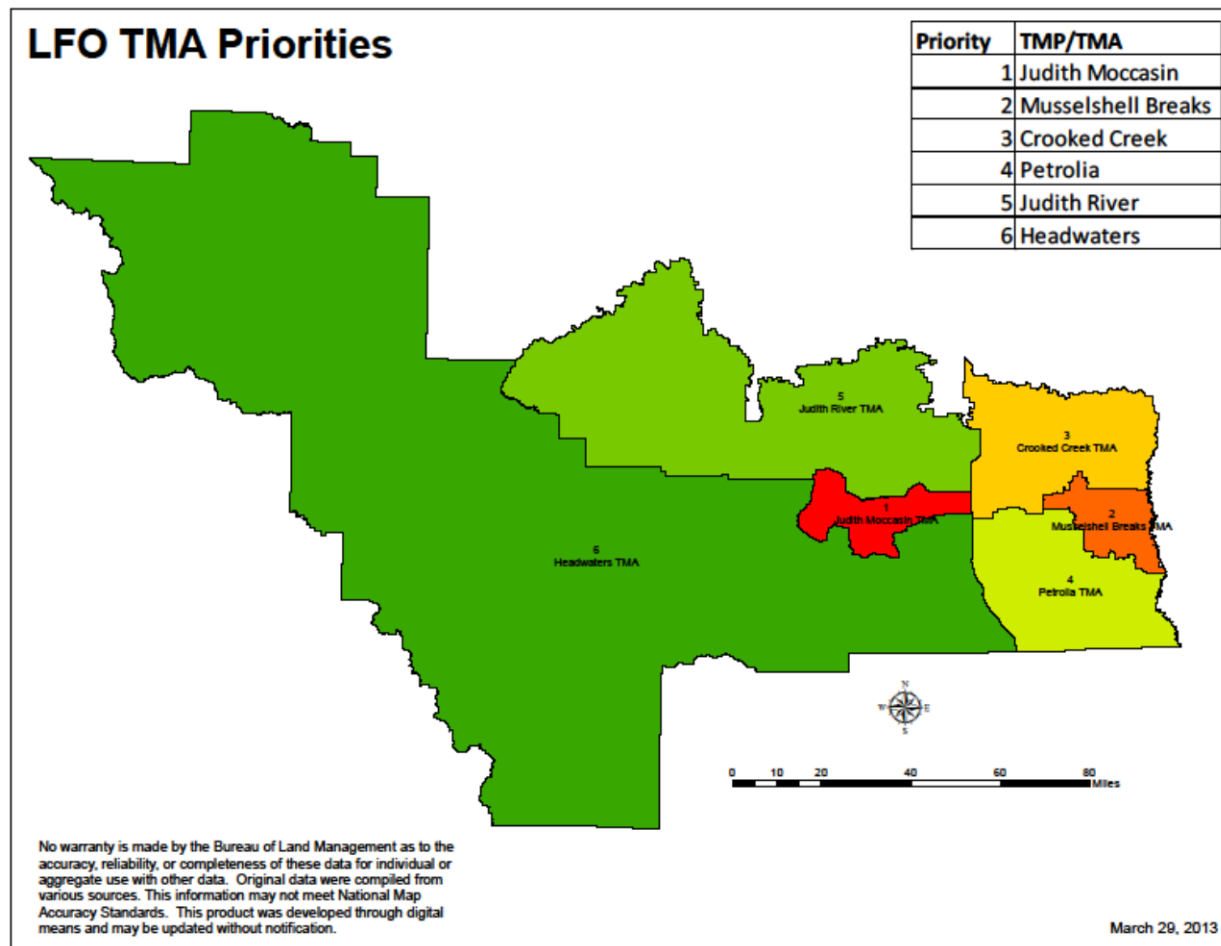
- Lack of comprehensive travel management planning that considers the relationships between various resources, authorized access, and recreation uses.
- Historic routes that predate planning for recreational opportunities.
- Unauthorized uses (including user-created routes and unauthorized construction and maintenance) emanating from existing routes and impacting other resources.
- Subdivision of private property resulting in the creation of new access points to public lands.
- Routes/areas open to motorized use, but accessible only to adjacent landowners.
- Conflicts between recreational users.
- A lack of inventory of roads, trails, and nonmotorized routes is currently impacting resources and planning efforts.

Travel Management Areas (TMAs)

Currently, the LFO is working with a contractor to inventory and evaluate six TMAs to be completed by December 2017. The TMAs are prioritized as follows: Judith Moccasin, Musselshell Breaks, Crooked Creek, Petrolia, Judith River, and Headwaters (Figure 2-17).

Figure 2-17

Lewistown Field Office Travel Management Areas



2.16.1.2 Forecast

Increase in Demand for Recreation Opportunities

Projected increases in OHV use elevate the need to prioritize OHV management in the LFO to provide and assure future resource protection and continued OHV recreation opportunities. Future OHV management will include designating and managing areas open to OHV use, areas limiting motorized use to designated roads and trails, and areas closed to motorized use.

The BLM is required to designate all public lands as open, closed, or limited for OHV use. There will be no motorized cross-country travel except in areas designated as open. Open areas will be limited to a size that can be realistically managed and is geographically identifiable, but large enough to offer a high quality motorized riding or driving opportunity for participants.

For areas with limited and open categories, managers may impose different types of restrictions including vehicle numbers, types, use times or seasons, permitted use, existing routes, designated routes, and other limitations necessary to meet management objectives.

Increase in Maintenance Requirements and Expenses

Maintenance costs are rising and each year, the BLM maintains fewer miles of BLM Roads. With flat federal budgets and rising fuel and equipment costs for contractors, it is likely that this trend will continue in the future.

Increased OHV Use

As is the case throughout the West, OHV use has increased dramatically in the planning area since the RMPs currently in use were written in the 1980s. Lands with no previous history of user impacts now commonly experience impacts to natural and cultural resources, as well as impacts to recreation. OHV use occurs nearly year round and for many users, the act of driving or riding an OHV is the primary reason for their visit. Most of these visitors live within an hour's drive of the area and enjoy practicing their technical skills, using their equipment, and spending time with family and friends. During autumn, most parts of the planning area experience heavy OHV use by hunters.

Effects of Urbanization and Increased Access

In addition to increased OHV use, urbanization of adjacent private lands has created additional nonmotorized and motorized use and new expectations for recreation experiences. Many users recreate on BLM lands because the lands are close to home and provide a convenient place to exercise, relieve stress, and spend time with family and friends. Recreation activities are always evolving and improving with new technologies. These activities on BLM land uses include: hunting, backyard hiking, mountain biking, horseback riding, dog walking, rock climbing, fly fishing, and OHV riding.

Competing Nonrecreational Uses

Increased transportation demands for nonrecreational uses (such as residential development and livestock grazing) have greatly affected recreation travel in some areas. Recreation experiences can suffer when transportation systems for other uses are increased or created. When the above factors are considered, it is apparent that there is a need for comprehensive travel management for all recreation uses, as well as close coordination with transportation planning for nonrecreational uses.

2.16.1.3 Key Features

Within the planning area, all areas are comprehensively managed for all types of transportation that involve both motorized and nonmotorized activities. Ear Mountain Trail, Collar Peak Trail, and Limekiln Trail support nonmotorized opportunities such as hiking, horseback riding, mountain biking, snowshoeing, and cross-country skiing.

Areas popular in dispersed motorized recreational opportunities have elevated OHV and travel management focus to a high priority on designated roads and trails so as to maintain or protect the resources. Such areas include the Chain Buttes BMA, Indian Butte BMA, Judith Mountains, and the Durfee Hills.

2.16.2 Access

2.16.2.1 Current Level

Generally speaking, access is acquired from willing landowners on a case-by-case basis as needs or opportunities arise, using criteria and direction provided in the guidance referred to above. The Lewistown FO uses acquisition of road and trail easements as the primary means of obtaining legal access to BLM land where it does not currently exist. The Lewistown FO has acquired 14 exclusive easements which provide legal access to BLM land for the US and its assignees (BLM), licensees, permittees, and the general public. In addition, the LFO has acquired 17 nonexclusive easements which provide administrative access across nonfederal land for specific tasks including timber sale management, permit and contract administration, etc. When possible, emphasis for easement acquisition is on those roads or trails identified through a route analysis process.

Most of the larger tracts of BLM land have legal public access via existing federal, state, and county road systems. Many smaller tracts of BLM land do not have legal access. In most cases, such parcels do not have resource values to justify public interest in acquiring access. Although used much less frequently than easement acquisition, the Lewistown FO uses land exchanges on occasion to acquire needed access to BLM land. Access is typically just one of many benefits of these exchanges. When disposing of BLM parcels containing roads or trails necessary for access to other federal land, the LFO protects these access routes by reserving them in conveyance documents.

2.16.2.2 Forecast

Access to BLM land is an issue of concern to both agency personnel and the public. The Lewistown planning area's existing fragmented ownership pattern of BLM land intermingled with private, state, and other federal land complicates the access situation. While the Lewistown FO has and is currently making progress in terms of improving access to BLM land, there are still areas within the Lewistown RMP area that lack legal access. Current planning guidance, with respect to access, is provided by the Headwaters and the JVP RMPs. Access is a concern statewide, so the BLM has developed a Montana Dakotas Access Board (MDAB) to address access needs based on individual office requests and State priorities. The mission of the board is quite simply to increase the amount of public access to public lands.

2.16.2.3 Key Features

For the purposes of this section, the key features of access refer to the physical ability and legal right provided for the public, agency personnel, and authorized users to reach BLM lands.

2.17 LANDS AND REALTY

The Lewistown FO lands and realty program is responsible for management of land use authorizations including ROW grants, land use permits, leases, and easements; land ownership adjustments through land acquisition and/or disposal; land withdrawals; and trespass identification and abatement. The lands and realty program supports other LFO resource management programs as well as those of local, state, and other federal agencies. The BLM land with unique or special values can be withdrawn and designated for specific purposes such as recreation development, or for cultural, historic, or other resource value protection. Some of the primary facets of the lands program are discussed below.

2.17.1 Land Use Authorizations

Rights-of-Way (ROWs)

A ROW grant is an authorization to use a specific piece of public land for specific facilities for a specific period of time (e.g., roads, power and telecommunication lines, pipelines, and communication sites). Some transportation and utility facilities rights-of-way are otherwise authorized by statute, regulation, or an agency-approved land use authorization (i.e., Letter of Consent for Federal Aid Highways). Casual use activities that involve practices that do not ordinarily cause any appreciable disturbance to BLM lands, resources, or improvements, also typically do not require a ROW. A ROW grant does not give the holder any possessory interest.

2.17.1.1 Current Level

Rights-of-Way (ROWs)

The ROW program is the most active portion of the lands and realty program in terms of the number of cases processed. As of July 2013, according to the BLM's LR2000 database, the LFO RMP area administers 327 existing ROW grants which encumber approximately 32,687 acres. These existing ROWs are for a myriad of different facilities and are held by private individuals as well as industry and government entities. There are between 15 and 18 ROW actions processed annually within the LFO RMP area. These include applications for new ROWs as well as the amendments, assignments, renewals, relinquishments, or terminations of existing ROWs.

It is the objective of the BLM to grant ROW and temporary use permits to any qualified individual, business entity, or governmental entity and to regulate, control, and direct the use of ROWs on public land so as to:

- Protect the natural resources on both BLM lands and adjacent properties, whether private or administered by another government agency.
- Prevent unnecessary or undue environmental damage to the lands and resources.
- Promote the utilization of ROWs in accordance with engineering and technological compatibility, national security, and current land use plans.
- Coordinate, to the fullest extent possible, all ROW actions with state and local governments, interested individuals, and appropriate quasi-public entities.

Table 2-63
Existing ROWs in the Planning Area

Existing Authorization	Number	Acres*
ROW roads	89	698
Federal Aid Highway, Sections 107 and 307	40	1,086
ROW roads RS-2477	1	1
ROW railroads	20	984
ROW powerlines facilities	4	21
ROW powerlines	38	1,291
ROW material sites	4	29
ROW reclamation project	10	155
Communication sites (FLPMA, 1911, federal and 44LD513)	11	3

Existing Authorization	Number	Acres*
ROW telephone	35	629
ROW water facility and irrigation	37	26,433
ROW oil and gas pipelines/facilities	8	420
ROW (other FLPMA, Bundy Fishing Access and DEQ air monitoring site)	18	804
ROW roads (other federal – FS)	12	133
TOTAL	327	32,687

* Rounded to nearest acre.

Recreation and Public Purpose (R&PP) Actions

Under the provisions of the Recreation and Public Purposes Act of 1954 (68 Statute 173; 43 USC 869 et seq.) as amended, the BLM, at its discretion, can sell or lease public lands for recreational or public purposes to state and local governments and to qualified nonprofit organizations. Some typical uses are historic monument sites, campgrounds, schools, city and county parks, fire houses, and hospitals. The BLM will not approve an R&PP lease or conveyance unless the public lands involved are used for an established or defined specific project. The lessee or patentee must commit to a plan of physical development, management, and use as well as certain other requirements before a lease or patent is issued.

The objective of the leasing program is to meet the needs of certain state and local governmental agencies and other qualified organizations for public lands required for recreational and public purposes. The BLM periodically reviews areas leased or sold under the act to ensure continued compliance with the terms. A lease may be terminated or patented land may revert to the United States if the entity involved is not complying with the terms.

As of July 2013, the Lewistown FO does not administer any R&PP leases. As of this same date, the BLM has patented approximately 258.170 acres of public land under the R&PP act via four separate case actions within the planning area.

Leases, Permits, and Easements

Section 302 of FLPMA provides the BLM's authority to issue, at its discretion, leases, permits, and easements for the use, occupancy, and development of the public lands. Any use not specifically authorized under other laws or regulations and not specifically forbidden by law may be authorized under this section of the FLPMA. Uses which may be authorized include residential, agricultural, industrial, and commercial, and uses that cannot be authorized under the primary ROW authorities. Some specific examples of uses authorized under this authority include commercial filming, equipment storage sites, and land cultivation. Section 507 of FLPMA, rather than Section 302, is the only authority for land use authorizations for other federal agencies.

The objective of this program is to provide for the use of the public lands by the private sector and state and local governments where the uses conform to land use plans and cannot be achieved prudently or feasibly on land other than public lands.

As of July 2013, the Lewistown FO area administers five ongoing leases/permits involving a total of 132.50 acres of public land within the planning area. The majority of permits issued within the Lewistown FO are short term in nature and used for commercial filming.

Airport Grants and Leases

Public lands can also be leased for public airport purposes under the Federal Public Airport Act of 1928. This authority has not been widely used in the BLM, and we do not administer any such *leases* within the Lewistown planning area. However, there has been one *patent* issued under this authority in the planning area and it was issued in 1951.

Land Classification

A land classification is a process required by law for determining the suitability of public lands for certain types of disposal or lease under the public land laws, or for retention under multiple-use management. A land classification accomplishes one of the following:

- Determines if BLM public lands are suitable for certain types of disposal or lease under the public land laws.
- Determines if BLM public lands are suitable for retention for multiple-use management.

Most land classifications also segregate public lands from the operation of all or some of the public land laws and mineral laws.

Section 7 of the Taylor Grazing Act of 1934 is now the only existing land classification authority. Before the passage of FLPMA in 1976, all BLM land disposal or lease actions required classification. Since FLPMA, Section 7 classifications are required only for the following disposal or lease authorities outside Alaska: R&PP; state selections; the Desert Land Act of 1877, the General Allotment Act of 1887, as amended; and the Carey Act of 1894. It should be noted that Section 7 classifications, including those made prior to FLPMA, remain in full force and effect until modified or terminated. Also, classifications made under now repealed authorities such as the Small Tracts Act of 1938 and the Classification and Multiple Use Act of 1964 continue in full force and effect until modified or terminated.

Trespass

It is the BLM's responsibility to protect the public's best interest in regard to its managed lands. Trespass actions are those uses of public land that occur or are ongoing without specific authorization or exceed the established thresholds of an authorization or of casual use. Casual use is defined by the regulations in 43 CFR 2920.0-5(k) as: *Casual use means any short term noncommercial activity which does not cause appreciable damage or disturbance to the public lands, their resources or improvements, and which is not prohibited by closure of the lands to such activities.*

Trespass actions can cause unmitigated damage to public lands and natural resources. The cost to resolve trespass and to clean up and reclaim the public land impacted by trespass is often passed on to the general public. These costs direct appropriated funds away from planned work and impact BLM's ability to complete its mission. In addition, the fair market value for use of the public lands is not realized by the public.

Trespass resolution involves cessation of the unauthorized use, occupancy, or development and may require removal of the unauthorized facilities or appropriate authorization of that use. Three considerations are included in trespass abatement.

- Payment of the administrative costs to resolve the trespass.
- Payment of fair market value for the period of unauthorized use.
- Rehabilitation and restoration of the affected public lands.

Trespass is an ongoing problem in the Lewistown FO. Limited staff and funding are contributing factors which allow trespass to continue unabated. When trespass actions go undetected or are ignored once identified, there is no incentive to cease and no deterrent to further trespass action. Some of the types of known illegal activities include indiscriminate dumping of trash, debris, and household wastes; farming/irrigation of public land; construction of roads; and other utility-related features. Agriculture trespass and trash dumping are the most common types, with numerous small acreage areas involved.

The Lewistown FO typically resolves one to two cases each year, with some situations requiring a formal land survey to determine property boundaries, rehabilitation of agricultural trespass areas, and dump cleanups. In trespass situations that demand legal resolution, the Lewistown FO has demonstrated resolve in working with the USDI Field Solicitor and the US Attorney. At the same time, every attempt is made to use good judgment and restraint in resolving trespass situations at the lowest level possible and hopefully converting the trespasser into a cooperator.

2.17.1.2 Forecasts

Rights-of-Way (ROWs)

The demand for new ROWs is likely to increase from the current 15 to 18 applications per year. While there has been some speculation about increased oil and gas activity within the field office (Heath Formation), industry has been slow to act on any potential with the readily available product with the Bakken Formation. Any increased ROWs as a result of such potential is likely to be fairly limited, with a possible 3-5 more applications per year.

It is not likely that renewable energy (wind) would be developed on public lands in the planning area. There are no existing wind authorizations or pending applications within the planning area. The lack of application activity and proximity to private lands, suggest there is little to no activity for wind energy expected to occur within the planning area. For additional information, refer to Section 2.17.5 Renewable Energy.

There is an increased demand for road ROWs across public land to provide legal access to private land. Most of these roads ROWs are being requested to provide a legal access document for sale of a parcel or residence. While subdivision development is limited within the planning area, any large blocks of scenic undeveloped lands are vulnerable to that activity. The increased demand for road ROWs could create a number of natural resource impacts and contribute to a growing rural-urban interface.

Recreation and Public Purpose (R&PP) Actions

As of July 2013, the Lewistown FO does not administer any R&PP leases. As of this same date, the BLM has patented approximately 258.170 acres of public land under the R&PP Act via four separate case actions within the planning area.

Lease and Permits

As of July 2013, the Lewistown FO area administers five ongoing leases/permits involving a total of 132.50 acres of public land within the planning area. The majority of permits issued within the Lewistown FO are short term in nature and used for commercial filming.

Airports Grants and Leases

This authority has not been widely used in the BLM, and we do not administer any such *leases* within the Lewistown planning area.

Land Classification

Section 7 of the Taylor Grazing Act of 1934 is now the only existing land classification authority. Before the passage of FLPMA in 1976, all BLM land disposal or lease actions required classification. Since FLPMA, Section 7 classifications are required only for the following disposal or lease authorities outside Alaska: the R&PP Act; state selections; the Desert Land Act of 1877, the General Allotment Act of 1887 (as amended); and the Carey Act of 1894.

Trespass

The Lewistown FO typically resolves one to two cases each year, with some situations requiring a formal land survey to determine property boundaries, rehabilitation of agricultural trespass areas, and dump cleanups. In trespass situations that demand legal resolution, the Lewistown FO has demonstrated resolve in working with the USDI Field Solicitor and the US Attorney. At the same time, every attempt is made to use good judgment and restraint in resolving trespass situations at the lowest level possible and hopefully converting the trespasser into a cooperator.

2.17.1.3 Key Features

Key features for lands and realty are directly related to those features already described above.

2.17.2 Land Tenure

2.17.2.1 Current Level

State Indemnity Selections

Generally, grants made by statehood acts to school sections 16 and 36 came into effect on the date of acceptance or approval of the survey. However, if, on the date the grant would have gone into effect, the land was appropriated under some applicable land law or there were natural deficiencies caused by fractional townships or sections and the grant could not be made, the state was entitled to select other unappropriated public lands. As of June 2013, there are 1,184.16 acres of state indemnity selection obligations remaining for the State of Montana.

Land Acquisition and Disposal

Acquisition, either through exchange, purchase of land and easements, or donation is an important component of the BLM's land management strategy. The agency acquires land from willing sellers when it is in the public interest and consistent with approved land use plans. The BLM's land acquisition program is designed to meet one or more of the following goals:

- Improve management of natural resources through consolidation of federal, state, and private lands.
- Secure key property necessary to protect endangered species, promote biological diversity, increase recreational opportunities, and preserve archaeological and historical resources.
- Implement specific acquisitions authorized by acts of Congress by acquiring minimal nonfederal lands or interest in lands.

Exchanges

The process of “trading” lands or interests in lands is referred to as a land exchange. Public lands may be exchanged by the BLM for lands owned by corporations, individuals, states, local governments, or other entities legally capable of holding title to and conveying land. Except for those exchanges that are Congressionally mandated or judicially required, exchanges are voluntary and discretionary transactions with willing landowners that serve as a viable tool for the BLM to accomplish its goals and mission. The lands to be exchanged must be of approximately equal monetary value and located within the same state. Exchanges must also be in the public interest and be in conformance with applicable BLM land use plans.

Land exchanges are BLM’s preferred method to accomplish the following: (1) bring lands and associated interests with high public resource values into public ownership; (2) consolidate land ownership and mineral estate patterns to achieve more efficient management of resource and BLM programs; and (3) dispose of public land parcels identified through RMPs.

While we periodically receive requests from the public to trade or exchange land, the exchange program is not an active program within the planning area due to the expense, complexity of the process, and a lack of staffing.

Purchases and Donations

The BLM has the authority to purchase lands or interests in lands. Purchase is not as widely used as exchange to acquire fee title to nonfederal lands. However, the agency does occasionally purchase nonfederal lands to acquire key natural resources or to acquire legal ownership to lands which enhance the management of existing public lands and resources. The primary funding authority for these purchases is the Land and Water Conservation Fund Act of 1974 (LWCF). Funding is Congressionally limited to specific project areas.

Acquiring land (fee title) through purchase helps consolidate management areas to strengthen resource protection. It is used primarily to enhance recreation opportunities and acquire critical wildlife habitat. Purchase can also be used as a means of acquisition where the owner of the nonfederal land is not interested in exchanging lands and is seeking monetary compensation.

Acquiring interests in land (less than fee title) through the purchase of easements allows the BLM to control certain rights on private property which usually involve access or development. Acquiring conservation easements allows the landowner to maintain existing land uses but protects the land from incompatible uses. Acquiring access easements across nonfederal lands for roads and trails provides the BLM and the public with the necessary access to “landlocked” public lands. For more information on access easements, see information within the Access Section.

The Lewistown FO does not have any pending purchase actions within the planning area. There is one pending donation from an anonymous donor of 880 acres.

Sales

The BLM’s general sale authority for public lands is Section 203 of FLPMA of 1976; however, the agency does not offer land for sale very often. The FLPMA requires that public lands be retained in public ownership unless, as a result of land use planning, disposal of certain parcels is warranted. Public lands must be sold at not less than fair market value and meet the very specific sale criteria of FLPMA.

The objective of BLM land sales is to provide a means of disposal of public lands which are found, through the land use planning process, to be suitable for disposal because of one or more of the following reasons:

- Such lands, due to their location or other characteristics, are difficult and uneconomic to manage as part of the public lands and are not suitable for management by another federal agency or department.
- Such lands were acquired for a specific purpose and the lands are no longer required for that or any other federal purpose.
- Disposal of such lands will serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public lands and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by retaining such lands in federal ownership.

There are no sales planned or pending within the Lewistown FO planning area.

2.17.2.2 Forecasts

State Indemnity Selections

Representatives of the State of Montana have recently indicated that they would like to resolve the remaining indemnity selection obligations. It is anticipated that all obligations to the State will be satisfied by July 2016. What, if any, impact this will have within the planning area is unknown at this time.

Land Acquisition and Disposal

Exchanges

Tracts of land that are designated in BLM land use plans as potentially available for disposal are more likely to be conveyed out of federal ownership through an exchange rather than a sale.

Purchases and Donations

Purchase is not as widely used as exchange to acquire fee title to nonfederal lands. However, the agency does occasionally purchase nonfederal lands to acquire key natural resources or to acquire legal ownership to lands which enhance the management of existing public lands and resources. However, the primary funding source for such acquisitions is LWCF and the source has specific requirements for types and areas of such purchases. There are no planned or pending purchases within the planning area.

Sales

Since FLPMA requires that public lands be retained in public ownership unless it is in the public interest to dispose of those parcels, there are likely to be very few (if any) sales of government land in the future. Lands disposed of by sale must be specifically identified as available for disposal by sale. The *JVP RMP* did not designate any parcels for sale within the Lewistown planning area. Tracts of land that are designated in BLM land use plans as potentially available for disposal are more likely to be conveyed out of federal ownership through an exchange rather than a sale.

2.17.1.3 Key Features

Key features for land tenure are directly related to those features already described above.

2.17.3 Utility Corridors and Communication Sites

2.17.3.1 Current Level

Utility and Transportation Corridors

Section 368 of the Energy Policy Act of 2005, PL 109-58 (HR 6), enacted August 8, 2005, directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate, under their respective authorities, corridors on federal land in 11 western states for oil, gas, and hydrogen pipelines, and electricity transmission and distribution facilities. The *Designation of Energy Corridors on Federal Land in the 11 Western States Programmatic EIS Record of Decision (ROD)* was approved on January 14, 2009.

Utility corridors are preferred routes for transportation and transmission facilities. Identification of corridors does not preclude location of transportation and transmission facilities in other areas if environmental analysis indicates that the facilities are compatible with other resource values and objectives. Further identification of corridors does not mandate that transportation and transmission facilities will be located there if they are not compatible with other resource uses, values, and objectives in and near the corridors, or if the corridors are saturated. Each ROW application is reviewed and analyzed using the environmental data which exist for the area as a basis to determine compatibility with existing uses and resource values.

The BLM may determine the locations and boundaries of ROW corridors during the land-use planning process.

There are two transportation and utility corridors that exist within the planning area. It is important to note that these corridors were not designated and were simply noted as existing corridors by BLM personnel. One of these corridors extends outside of the planning area and into the UMRBNM, extending from Geraldine in Chouteau County to Glengarry in Fergus County. This corridor contains a Montana Power transmission line and US Highway 80. The other corridor passes from the northwest corner to southeast corner of Judith Basin County. Contained in this corridor is a Montana Power transmission line, US Highway 87, and two Conoco oil pipelines, one being 8 inches in diameter and the other 12 inches in diameter. Oil is transported from oil fields in the Sweet Grass Hills to Conoco's oil refinery in Billings, Montana, through both pipelines.

The *Headwaters RMP* did not designate any utility or transportation corridors, retaining the flexibility to avoid locating facilities in areas of high public recreation use while recognizing the need to make public land available for development of utility and transportation rights-of-way.

Communication Sites

There are only two locations specifically identified as available for communication site use: South Moccasin Mountains and Judith Peak (Judith Mountains) (*JVP RMP*). These are the two sites in use today. The LFO planning area also includes 11 communication site ROWs occupying a total of 12 facilities at two different locations as of July 2013. These uses include cellular telephone, paging, TV translators, mobile radio, and other uses.

2.17.3.2 Forecast

Utility and Transportation Corridors

It may be necessary to determine some corridor development, but scattered land ownership patterns can make that difficult. Although there is no formal designation of corridors, there is some trend towards development along corridors themselves. This exists where ROW applicants are encouraged to locate their use/authorization immediately adjacent to another such similarly developed lineal feature (e.g., overhead power lines to run adjacent to roads or highways).

Communication Sites

The currently designated communication sites can continue to support new users if there are applicants. Within the planning area there is not likely to be any new designated sites based on the fact that we have not received any new applicants or notification of need outside of those locations. Any location application would have to be addressed through the NEPA process, and have a communication site management plan developed.

2.17.3.3 Key Features

Key features for land tenure are directly related to those features already described above.

2.18 RENEWABLE ENERGY

As demand for clean and viable energy to power the nation increases, the occurrence and availability of renewable energy sources on public lands is an important consideration in land management planning. Solar, wind, biomass, geothermal, and hydroelectric power are considered renewable energy resources. It is the BLM's general policy to encourage renewable energy development in acceptable areas.

Market trends and market value determine the pace and magnitude of proposals to develop renewable energy. The importance of renewable energy sources in the planning area may increase as nonrenewable energy prices increase and as the need for energy grows. While demand for renewable energy has been illustrated by the increase in project proposals for various renewable energy technologies throughout the West on both public and private lands, this demand has not materialized within the planning area to date. Some of the obstacles to development include a lack of transmission infrastructure for delivery of electricity, difficulties in negotiating power purchase agreements, and uncertainty in federal and state regulatory policy.

In cooperation with the US Department of Energy's (DOE's) National Renewable Energy Laboratory (NREL), the BLM assessed renewable energy resources on public lands in the western US, including Montana (BLM and DOE, 2003). The assessment reviewed the potential for concentrated solar power (CSP), photovoltaic (PV), wind, biomass, and geothermal energy on BLM, BIA, and FS lands in the West. Hydropower was not addressed in the BLM/NREL report. None of the lands within the planning area fell within the "top pick" 25 rated BLM planning units for any of the resources studied, but the LFO was identified as having high potential for wind power (BLM and DOE, 2003).

The Western Governors' Association also embarked on a study with the DOE that resulted in the identification of "hubs" representing areas that may be cost effective for renewable energy development in consideration of energy potential, distance to transmission, protective designations, and sensitive resources. Two of the three "hubs" identified in Montana lie just north of this planning area (Western Governors' Association and DOE, 2009, and Western Governors' Association, 2012).

The following discussion outlines the current condition for all types of renewable energy resources in the planning area. However, since wind energy has the greatest potential for development in the planning area, it will be addressed in more detail throughout this planning process than the other renewable resources.

2.18.1 Current Levels

Biomass

Biomass power is generated from the energy in plants and plant-derived materials such as food crops, grassy and woody plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes. Biomass can be used for direct heating (e.g., burning wood in a fireplace or wood stove) and for generating electricity, or it can be converted directly into liquid fuels to meet transportation energy needs. According to USC 15855 (Grants to Improve the Commercial Value of Forest Biomass for Electric Energy, Useful Heat, Transportation Fuels, and Other Commercial Purposes – Energy Policy Act of 2005, Section 210), the Secretary concerned may make grants to any person in a preferred community that owns or operates a facility that uses biomass as a raw material to produce electric energy, sensible heat, or transportation fuels to offset the costs incurred to purchase biomass for use by such facility. There are no authorizations or pending applications for biomass production within the planning area.

Lack of available transmission, transportation costs to deliver feedstock, and high costs per kilowatt for electrical generation all pose challenges for biomass energy generation facilities. However, options may exist in the LFO for biomass utilization. Generally, production of biomass resources in the LFO would result from management of forests and woodlands as guided by BLM's forestry program. Use of small diameter wood products or residue is currently encouraged, when possible. See the Forest, Woodland, and Special Products Section for additional discussion. In the event a biomass energy generation facility is proposed on BLM lands, such a proposal would be processed under the lands and realty ROW regulations.

Geothermal

Geothermal resources are typically underground reservoirs of hot water or steam beneath the surface of the earth. Geothermal energy is produced when this steam or heat is used to turn a turbine to create electrical energy. Geothermal steam and hot water naturally discharge at the earth's surface in the form of hot springs, geysers, mud pots, or steam vents. Geothermal resources also include subsurface areas of hot, dry rock.

The *Final Programmatic EIS for Geothermal Leasing in the Western United States* evaluates various alternatives for allocating lands as being closed or available for geothermal leasing and analyzes stipulations to protect sensitive resources. The Record of Decision (ROD) for the *Geothermal Programmatic EIS* (BLM and FS, 2008) amended existing plans, including the *Judith-Valley-Phillips RMP* and the *North Headwaters RMP*, to facilitate geothermal leasing on federal mineral estate. In these planning units, 456,457 acres are open to leasing and 35,147 acres are closed. No electrical production via geothermal resources was projected from any specific areas in the planning area.

Additional information on geothermal resources can be found in the Energy and Minerals Section. Any proposals for geothermal development on BLM-administered lands would be processed under leasing regulations for geothermal resources, and stipulations, mitigations measures, and BMPS outlined in the ROD for the *Geothermal Programmatic EIS* would be applied as appropriate.

Hydropower

Hydroelectric power is generated through use of the gravitational force of falling or flowing water. There is no specific policy guidance or direction for the development of hydroelectric facilities on BLM-administered land as a renewable energy resource. Proposals for hydroelectric power development on any federal lands would generally be authorized under FERC authority in consultation with BLM on mandatory license provisions for BLM-administered lands, based on provisions of the Federal Power Act, as amended. While the potential for construction of major hydroelectric facilities in the LFO is limited, given the lack of major flowing water resources under BLM jurisdiction, the potential for smaller hydropumping projects may exist in certain areas. While interest in these types of projects is increasing as an avenue to “firm” electricity generated from wind, the BLM has not received applications for any type of hydroelectric power authorizations on BLM-administered land in the planning area. Specific allocations and management related to new hydroelectric development will not be addressed further.

Solar

With our local topography and lack of active solar daylight within the planning area, the potential for commercially-viable solar development is very low and is expected to remain low within the foreseeable future.

The 2003 assessment conducted by BLM in cooperation with NREL did not rate the planning area among the top 25 planning units for solar resource potential, either for concentrated solar power (CSP), or photovoltaic (PV) technologies (BLM and DOE, 2003). Solar energy on BLM land has been studied more recently in a six-state area in the Southwest (Arizona, California, Colorado, Nevada, New Mexico, and Utah), resulting in a ROD issued in October 2012 designating 17 solar energy zones (SEZs). This study included BLM lands with solar insolation levels greater than 6.5kWh/m²/day and slopes of less than 5 percent.

There are no locations in the planning area that receive the solar insolation levels considered necessary for development of a viable commercial facility based on current technologies. As a result, the potential for development of utility scale solar facilities in the planning area is not likely, nor have there been any expressions of interest from industry. Due to the unlikelihood of commercial solar development in the planning area, allocations and management related to solar development will not be addressed in this analysis. Small scale solar developments used to power stock tanks or recreation facilities, etc. are likely to be the only use of solar energy in the planning area.

In the unlikely event applications for commercial solar energy projects are received, the appropriate field office would process the application in consideration of the current right-of-way regulations and directives outlined for BLM’s solar program, including application of BMPs and mitigation strategies.

Wind Development

The *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* was released in June 2005. It addressed the impacts of the future development of wind energy resources on public lands. The *Programmatic EIS on Wind Energy* also addressed the establishment of policies and best management practices as mitigation measures for potential environmental impacts and addressed the amendment of individual BLM LUPs.

Current management for wind energy development guidance is provided by IM No. 2009-043, dated December 19, 2008. This IM updates and replaces the Wind Energy Development Policy (IM 2006-216),

issued August 24, 2006. The new IM requires that the initiation of any new planning effort to create, revise, or amend a BLM LUP will comply with the policy provided in the IM.

The BLM Land Use Planning Handbook - H-1601-1 requires that land use planning efforts address existing and potential development areas for renewable energy projects, including wind-produced energy (see H-1601-1, Appendix C, II Resource Uses, Section E, Lands and Realty). The BLM encourages the development of wind energy within acceptable areas, consistent with the Energy Policy Act of 2005 and the BLM Energy and Mineral Policy (August 26, 2008). This RMP revision will address the environmental and public concern issues associated with commercial wind energy development.

The IM provides new and very specific guidance regarding VRM and states that VRM management classes are not intended to be used to exclude or preclude land uses, including opportunities for development of wind energy in areas with high wind energy resource potential. Therefore, it is critical that when the LFO makes land use decisions, it considers the attainability and manageability of VRM objectives relative to wind energy resources and development potential and is consistent with national energy priorities. The VRM management class designations must be carefully considered in areas with high wind energy resource potential (wind power class 5 and above). This is especially important when considering the differences in resource management constraints relative to VRM Class II and Class III management classes in a planning area.

The IM also addresses ACECs. The Programmatic EIS established the policy that all ACECs were to be excluded from wind development. The subject IM changes this policy to ensure consideration of the purpose and specific environmental sensitivities for which the area was designated. All new, revised, or amended land use planning efforts will address and analyze ACEC land use restrictions individually, including restrictions to wind energy development. For future land use planning efforts, ACECs will not be universally excluded from wind energy site testing, monitoring, or development but will be managed consistent with the management prescriptions for the individual ACEC.

There are not currently any authorized ROWs or pending applications for wind energy within the planning area, nor are there any testing sites.

2.18.2 Forecast

Montana has wind resources consistent with utility-scale production; the state is rated third nationally for wind energy potential. An assessment conducted by BLM in cooperation with the DOE's National Renewable Energy Laboratory (NREL) rated the Lewistown planning unit as high in wind potential (BLM and DOE, 2003). A *Final Programmatic Environmental Impact Statement (PEIS) on Wind Energy Development on BLM- Administered lands in the Western United States* was released in June 2005 (BLM, 2005b) and evaluated the potential environmental and socio-economic impacts associated with wind energy development on BLM-administered lands in 11 western states over the next 20 years (2005 to 2025). The December 2005 ROD based on the PEIS analysis amended 52 land use plans, including the Judith-Valley-Phillips RMP and the Headwaters RMP, with the establishment of BMPs to be used when evaluating and authorizing wind energy applications.

The ROD also excluded ROW authorizations for wind facilities on BLM-administered lands in ACECs and in areas that are part of the National Landscape Conservation System (NLCS), including designated wilderness, WSAs, national monuments, national conservation areas (NCAs), wild and scenic rivers (WSRs), and national historic and scenic trails. Subsequently, the policy contained in the 2005 ROD on ACECs has been revised to defer to the decisions contained in local land use planning documents containing management prescriptions for ACECs.

The potential for utility scale wind energy development in the planning area is based on methods used in the *Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in the Western United States* (BLM, 2005).

Areas are grouped by wind power class derived from 50-meter wind data mapped by the NREL. Wind power classes are divided into seven classes: poor, marginal, fair, good, excellent, outstanding, and superb. For purposes of analysis, the seven wind power classes are further grouped into three distinct levels: high, moderate, and low potential for wind power resources.

Wind farms in Montana mainly occupy private lands, though some include State of Montana school trust lands. There are no wind developments situated on BLM-administered land in Montana.

In addition to wind power classifications, other elements influence the potential for wind energy development in the planning area. Proximity to transmission lines as well as available capacity on them is a major factor in the siting of wind facilities. Adverse impacts to other resources and resource programs can also affect operation and siting. Large wind turbines affect the visual landscape and can be considered a visual intrusion. Another key consideration is the presence of special status species and potential impacts to both the species and habitat from wind development. In the planning area, concerns with sage grouse, golden eagles, and other raptors, migratory birds, and bats, as well as cultural, paleontological, wilderness, and visual resources pose challenges to wind development.

The BLM currently processes wind energy ROW applications following current right-of-way regulations as supplemented by its wind energy development policy (Washington Office [WO] IM No. 2009-043). On a national basis, BLM continues to develop and refine policy and guidance on wind energy planning and development. Currently, no applications are pending in the planning area for either wind site testing and monitoring (met towers) or development (wind farms). There are indications that industry may be avoiding siting on public land given the potential to encounter resource constraints and associated time and resources necessary to address public land issues and processes.

2.18.3 Key Features

Key features for renewable energy are directly related to potential of these uses described in further detail above.

2.19 WITHDRAWALS

2.19.1 Current Level

A withdrawal is a formal action that sets aside, withholds, or reserves federal lands by statute or administrative order for public purposes. A withdrawal accomplishes one or more of the following:

- Transfers total or partial jurisdiction of federal land between federal agencies.
- Segregates (closes) federal land to operation of all or some of the public land laws and/or mineral laws.
- Dedicates federal land for a specific public purpose.

Withdrawals are established for a wide range of public purposes including military reservations, administrative sites, national parks, reclamation projects, recreation sites, power site reserves, etc. There are three major types of formal withdrawals: (1) administrative withdrawals - those made by the President, the Secretary of the Interior, or other authorized officer of the Executive Branch of the federal government; (2) Congressional withdrawals - legislative withdrawals made by Congress; and (3)

Federal Power Act or Federal Energy Regulatory Commission (FERC) withdrawals - power project withdrawals established under the authority of the Federal Power Act of 1920.

The BLM is responsible for reviewing all proposed administrative withdrawals and restorations; for making recommendations concerning them to the Assistant Secretary of the Interior - Land and Water Resources; for developing and conducting a withdrawal review program; and for assisting other agencies with their withdrawal and revocation programs.

There are no forecasts for withdrawals currently available. Key features are related to those described primarily under the Minerals and Energy Section in 2.13.

2.20 FOREST, WOODLAND, AND SPECIAL PRODUCTS

2.20.1 Current Level

Active forest management practices in the resource management area provide a variety of forest products including the following: sawlogs, posts and poles, biomass, fuelwood, and specialty products. Forest management levels were set in the original RMPs for the planning area. The annual allowable harvest level was set at 650 thousand board feet (MBF) for the Judith Resource Area while the allowable cut in the Headwaters Resource Area was set at 26.45 million board feet (MMBF) per decade. The BLM would also meet the demand for the sale of minor forest products such as posts and poles and fuelwood. Most of the forested lands in the planning area occur in isolated parcels with poor access, relatively small volumes, and limited value due to distances from forest product markets. Consequently, the sale and harvest of forest products has been accomplished primarily through negotiated sales with contractors working on adjacent, private lands. Most sales are identified through public demand, where access is limited and harvest is occurring on adjacent private lands. However, the forestry program has recently increased as the relationships between private landowners and the BLM have developed into a partnership for managing all the forest lands across ownership boundaries. Resolutions for many of the access issues and seasonal restrictions concerning hunting seasons, have allowed for a more active forest management program.

Recently, larger volumes of sawlogs, pulp, and biomass have been harvested than in past years as a result of salvage operations in response to insect and disease outbreaks and other natural disturbances. Harvest volumes for salvage operations for the planning area have averaged 1.5 MMBF for the past 5 years. Fuelwood sales average approximately 400 cords per year. The few existing markets for pulpwood and biomass are small and unstable with low market prices and high transportation costs. During the last 2 years, markets have been available, and approximately 150 tons of pulp and 300 tons of biomass have been produced. Different forest products available in the planning area include:

- Saw logs
- Posts and poles
- Pulp
- Christmas trees
- Fuelwood

2.20.2 Forecast

As a result of lack of management and the exclusion of fire, forests have become largely decadent and in decline. Trees weakened by extended drought and competition for sunlight and water will continue to be infested by insects and disease which could reach epidemic levels. Forest composition and structure

will continue to change toward decadence and loss of proper function. Overall forest health will continue to decline. As a result of these conditions, forest management opportunities that mimic natural disturbance processes will increase, creating a greater supply of available wood products due to restoration treatments.

Market price often reflects the demand for wood and wood products. The demand for wood products in the planning area is widely variable with a limited number of mills and pulp and biomass facilities. Markets occur outside the planning area; however, transportation costs are generally prohibitive in these markets although stewardship contracting authority has allowed flexibility and increased the opportunity to take advantage of distant markets.

Recently, market demand for wood products has been moderate to high, but fluctuations in the housing market and advances in biomass utilization will affect demand over time.

Forest health is in decline and evidence of insect and disease infestation is increasing. Fire has increased in frequency and intensity, affecting larger areas of forested lands. The available volume of salvage harvest timber has increased as a result of fire and insect and disease outbreaks, particularly mountain pine beetle mortality. In addition, the emphasis on restoration forest management will create nontraditional forest products that may be utilized if markets are available.

2.20.3 Key Features

Active forest management within the planning area will primarily be focused on BLM lands within the Judith, Little Snowy, and Little Belt Mountains as the BLM parcels located in the vicinity of these ranges contain a large majority of merchantable material.

SPECIAL DESIGNATIONS

2.21 AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECs)

An ACEC is defined in FLPMA, Public Law 94-579, Section 103(a) as an area within the public lands where special management attention is required to protect and prevent irreparable damage to important historical, cultural, and scenic values; fish and wildlife, and other natural systems or processes; and to protect life and safety from natural hazards. The BLM prepared regulations for implementing the ACEC provisions of FLPMA. These regulations are found at 43 CFR 1610.7-2(b).

Special management attention refers to management prescriptions developed during preparation of an RMP or RMP amendment, expressly to protect the important and relevant values of an area from the potential effects of actions permitted by the RMP including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP (BLM Manual 1613). Such management measures would not be necessary or prescribed if the critical and important features were not present. To be designated as an ACEC, the area must meet criteria of relevance and importance found in 43 CFR 1610-7-2(A)(B), and as defined in BLM Manual 1613 to be eligible for designation as an ACEC, an area must meet criteria for both relevance and importance.

An ACEC possesses significant historic, cultural, or scenic values; fish or wildlife resources (including habitat, communities, or species); natural processes or systems; or natural hazards. In addition, the significance of these values and resources must be substantial in order to satisfy the importance criteria. Restrictions that arise from an ACEC designation are determined at the time the designation is made, and are designed to protect the values or serve the purposes for which the designation was made.

Goals, standards, and objectives for each proposed ACEC will be identified, as well as general management practices and uses, including necessary constraints and mitigation measures. The RMP will identify a reasonable range of alternatives that will include current management for existing ACECs, as well as management for proposed ACECs.

Management prescriptions that arise from an ACEC designation are determined at the time the designation is made and are designed to protect and preserve the values or serve the purposes specific to the designation. In addition, ACECs are protected by the provisions of 43 CFR 3809.1-4(b)(3), which requires an approved plan of operations for activities (except casual use) under the mining laws. The EIS for the revised RMP will identify a reasonable range of alternatives that will include current management for these areas, as well as potential boundary adjustments to existing ACECs, re-evaluation of relevance and importance criteria, and analysis of additional ACEC nominations.

2.21.1 Current Condition

The LFO currently manages four ACECs within the planning area: Judith Mountains Scenic Area ACEC, Acid Shale-Pine Forest ACEC, Square Butte ONA ACEC, and Collar Gulch ACEC. Map 10 shows the locations of these ACECs within the planning area.

Judith Mountains Scenic Area ACEC

The *Judith Resource Area RMP* designated 3,702 acres of BLM-administered public lands as an ACEC to protect the scenic, wildlife, and recreation values in the Judith Mountains. Designation of the ACEC only applies to public lands administered by the BLM. This area is managed to mitigate impacts to resources from surface-disturbing activities. Off-road travel will be restricted yearlong to designated roads and trails. The ACEC will be an avoidance area for ROWs. The area will be available for restricted management of forest products. The area remains open to mineral entry.

Acid Shale-Pine Forest ACEC

The Acid Shale-Pine Forest is comprised of soft, gray-black marine shales that cover most Montana lowlands in a rough triangle from Wolf Point to Cut Bank south to Bridger and Hardin. They form the parent materials for many of the soils in this area. The term “acid shales” are due to sulphur in iron pyrites and have a pH of 3.3 to 5.5. One of these soils is the Volberg (Dilts) series which is predominantly clay and occurs throughout eastern Fergus and western Petroleum Counties. They are found in almost straight but discontinuous line north of Highway 200 from a point approximately 13 miles west of Grass Range to Winnett. Volberg soils often give rise to a unique flora characterized by ponderosa pine, horizontal juniper, sun sedge, and prairie sandreed. This is dramatically different from the ponderosa pine forest habitat types normally found in the area described by Jorgenson (1979), Harvey (1982), and Pfister, et al. (1977).

Briggs Coulee and War Horse contain the largest, best developed and most diverse example of acid shale pines on BLM lands.

The *Judith Resource Area RMP* designated both BLM tracts, War Horse (817 acres) and Briggs Coulee (1,646 acres), within an acid shale-pine forest ecosystem a research natural area ACEC to protect an endemic plant community unique to the area and a fragile watershed. The ACEC is a research natural area where research is allowed to determine the effects of grazing, fire, etc. on this type of plant community. The BLM allows research at War Horse and maintains Briggs Coulee as a control site.

Disposal of forest products from the area is prohibited, unless necessary for stand preservation. The current management direction is for intensive wildfire suppression. Off-road vehicle use is restricted yearlong to designated roads and trails. The two ACEC tracts remain open to mineral entry.

Square Butte ACEC

The compelling and imposing butte rises 2,400 feet above the surrounding plains. Square Butte has exceptional diverse habitats for mountain goats, elk, mule deer, prairie falcons, and a variety of other wildlife species.

The area contains a porphyritic igneous rock, known as shonkinite, unique to Montana which creates massive cliff faces, soaring buttresses, spires and pinnacles, and outstanding scenic values. Numerous springs occur on the flanks of the butte and support riparian shrub and tree communities nestled in drainages among dense conifer forests surrounding the butte. The butte contains abundant cultural and historical values.

The *Judith Resource Area RMP* designated 1,947 BLM acres an ACEC to protect natural endemic systems, cultural sites, scenic qualities, and rare geologic features unique to Montana, and identified key wildlife viewing sites under the Watchable Wildlife Program. Designation of an ACEC only applies to public lands administered by the BLM. This area is managed primarily for wildlife, cultural resources and recreation.

Square Butte is currently segregated from the mining and leasing laws by a classification under the authority of the Classification and Multiple Use Act of 1964 (CMU). The BLM will pursue a protective withdrawal for Square Butte to segregate this area from mining claim location to protect natural endemic systems, cultural sites, scenic qualities, and rare geologic features unique to Montana. The classification will be terminated when the area is withdrawn.

Surface-disturbing activities are prohibited including transmission lines, roads, communication sites, pipelines, etc. Recreation and habitat direction for the area will include a trail system, camping areas, a recreation use policy, and habitat management direction for wildlife populations including prescribed fire, security areas, etc. The sale of forest products is prohibited, unless necessary for stand preservation.

Legal access to Square Butte does not exist. Acquiring access remains an LFO priority. The area is closed to ORVs.

Collar Gulch ACEC

The *Judith Resource Area RMP* designated 1,618 BLM acres as an ACEC to protect a pure strain of westslope cutthroat trout which is a MFWP state species of special concern and BLM-designated sensitive species. Designation of an ACEC only applies to public lands administered by the BLM. The primary emphasis is protection and improvement of fisheries habitat for the westslope cutthroat trout population, while encouraging nonmotorized recreational use.

The area is closed to motorized vehicles, except for the main Judith Peak Road and connected Big Grassy Peak and Crystal Peak/Collar Ridge access roads. There are no attempts to acquire additional public access to the area.

Developments in the area will be designed to protect trout habitat. Stream protection and enhancement structures have been initiated to improve trout habitat. The BLM will initiate a study to identify the source of water quality degradation in the drainage and develop appropriate measures to eliminate or mitigate the degrading source.

The BLM has implemented a nondegradation policy for the waters in Collar Gulch Creek to protect the resident population of westslope cutthroat trout. The nondegradation policy applies to operations located within the watershed; from the beginning of Collar Gulch Creek downstream to the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4. The point at which nondegradation compliance would be determined is the upstream limit of the known cutthroat trout occurrence. Variances will be provided for individual operations only after application of best reasonably available control technology; and only to the extent that it will not impact the trout population.

The BLM implemented a routine water quality monitoring program in the drainage to establish baseline conditions.

Withdrawal of surface or groundwater is currently restricted when the flow in Collar Gulch Creek drops below 3 cubic feet per second measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4. No applications for withdrawal of ground or surface water have been received.

Concurrent reclamation is emphasized, thereby reducing erosion and sedimentation potential.

Surface-disturbing activities are to be designed to minimize impacts to the Collar Peak Trail and avoid impacts to the Tate-Poetter Cave resources that also occur within the ACEC.

2.21.2 Trends and Forecast

Current uses in the ACECs include recreational activities such as hiking, hunting, target shooting, fishing, wildlife viewing, photography, and dispersed camping. All of the ACECs, except Square Butte, offer outstanding casual recreational opportunities. Judith Mountains Scenic Area, Acid Shale-Pine Forest and Collar Gulch ACECs are likely to receive increases in visitation. Uses such as motorized recreation, mountain biking, photography, interpretive/guided tours, rock climbing, and geo-caching will become more popular in the region.

Judith Mountains Scenic Area ACEC

This area is the dominant scenic feature on the landscape as seen from Lewistown and Highways US 191 and 87. The scenic values of the Judith Mountains have regionally-significant qualities. This area is the last outlying eastward forested mountain range before entering the Great Plains Physiographic Region. Recreation use data indicates it is important to visitors, as well as, providing opportunities to recreational services from nearby communities. The scenic backdrop to Lewistown is commonly used in media marketing for the community and outlying areas. The scenic quality of the area is vulnerable to adverse change. Recent emphasis on forest health and management issues due to widespread microburst blowdowns and mountain pine beetle infestations within the ACEC has resulted in implementation of salvage timber sales that have included road construction activities which have altered and decreased scenic values. Interest in forest management activities in the area is expected to continue.

Acid Shale-Pine Forest ACEC

Volberg soils are considered fragile and susceptible to damage from livestock grazing, ORV use, wildfire, and timber harvest. Expected trends include increased recreation and visitor use, potential for wildfire, unauthorized off-road use, and road proliferation.

Livestock grazing occurs on both units. Those allotments that contain War Horse and Briggs Coulee were determined to be in conformance with standards for rangeland health and guidelines for livestock management. Distribution of livestock is limited within the ACECs due to proximity of water sources and forage availability. Most livestock use occurs on the forest perimeter to provide shading. Maintenance of land health standards, which include soil stability and integrity of native plant communities, is expected to continue under the current livestock management.

However, current conditions also indicate that there is an abundance of young age conifers which will likely result in future conifer encroachment into open areas, increased ponderosa pine stand density, and an accumulation of litter. These conditions will likely, over time, present a risk to the integrity of native understory plant communities.

Square Butte ACEC

Meadows and open areas, particularly on top of the butte, have experienced conifer encroachment for decades which has resulted in overall declines in the quality of habitat and grass/forb communities. Some small-scale wildfires have occurred in recent years, but fuel buildup is expected to continue increasing the likelihood of larger fires. These trends are expected to continue until fuel loads are reduced.

Lack of public access limits recreational use of Square Butte; however, modest levels of use occur through from access granted from adjacent private lands. No major shifts in the level of public use are expected until access can be acquired.

Collar Gulch ACEC

Collar Gulch Creek has become the focal point of a cooperative effort between the BLM and MFWP to restore, improve, and maintain habitat associated with a genetically pure population of westslope cutthroat trout. Pure westslope cutthroat trout are extirpated throughout most of their historic range. These trout were once common but, due to habitat degradation, hybridization, and competition from nonnative species, the remaining pure strains are now largely relegated to a few isolated reaches of headwaters. Reasons for the critical condition of the subspecies include habitat destruction from logging, road building, grazing, mining, residential development, agriculture and impoundments, introduction of nonnative hatchery strains, and competition and hybridization from introduced nonnative fish species. Small, isolated populations face ongoing threats from land use activities, hybridization, and wildfire.

The Collar Gulch Creek population is the easternmost population of westslope cutthroat trout documented in the nation. The westslope cutthroat trout is a state species of special concern, BLM sensitive species, and has been petitioned for listing under the ESA.

Since 1994, the BLM has managed this 2-mile segment of Collar Gulch Creek and 1,618 acres of public land surrounding it as an ACEC; however, the Collar Gulch cutthroats are not secure and their future is complicated by the vulnerability of habitat loss due to the isolation of the population and small stream segment.

2.22 BACK COUNTRY BYWAYS

National Back Country Byway Program

The BLM began a back country byway program in 1989 to focus on enhancing recreational opportunities. A scenic byway system was created 2 years later under Section 1047 of the Intermodal Surface Transportation Efficiency Act of 1991. This act recognized the BLM back country and scenic byways as a component of the national scenic byway system (Section 1032, Eligible Projects). The objectives of the byway program include the following:

- Enhance opportunities for the American public to see and enjoy the unique scenic and historical opportunities on public lands.
- Foster partnerships at local, state, and national levels.
- Contribute to local economies.
- Enhance the visitor's recreation experience and communicate the multi-use management message through effective interpretative programs.
- Manage visitor use along the byway to minimize impacts to the environment and to provide protection for the visitor.
- Contribute to the national scenic byway system in a way that is uniquely suited to national public lands managed by the BLM.

2.22.1 Current Condition

Missouri Breaks Back Country Byway

The BLM manages one national back country byway in the planning area: Missouri Breaks National Back Country Byway. The Missouri Breaks National Back Country Byway runs through central Montana, encompassing an area of varied geography and historical significance. The byway takes you past grassy expanses, rugged cliffs, and historical sites that are adjacent to the CMR NWR, the wild and scenic portion of the Missouri River, the Nez Perce National Historic Trail (NHT) and the Lewis and Clark NHT.

The Byway exploration begins by heading east out of Winifred, Montana. The byway traverses 2.5 miles of BLM land along DY Trail and .5 mile of BLM land along Knox Ridge Road. This southern stretch of the byway follows the Nez Perce National Historic Trail and, at the byway's western curve, is the CMR NWR. Continuing along to the northern section, the byway runs along the wild and scenic Missouri River and traverses the rough terrain that fur traders dubbed the "badlands." Former campsites of the famous Lewis and Clark also lie along the way.

Multiple-use resource activities have remained limited within the corridor of the byway. Visual intrusions along the byway do not disrupt the overall character of landscape. However, impacts of dispersed recreation, including OHV use, are becoming apparent and can be contributed to the popularity of the area during the hunting season.

2.23 NATIONAL TRAILS

Land use planning guidance requires special management for Congressional designations (Handbook 1601-1, Appendix C, page 27). There are three Congressional designations in the planning area: the Nez Perce and Lewis and Clark National Historic Trails (NHTs) and the Continental Divide National Scenic Trail (NST). The NHT and NST designations are provided to guide management and protection of Congressionally-designated historic trails, scenic trails, and surrounding areas. In 1968, the National

Trails System Act (NTSA, Public Law 90-543) provided for the development of a national system of trails in urban, rural, and wilderness settings. Originally, the Act specified three categories of national trails: scenic trails, recreation trails, and connecting or side trails. In 1978, historic trails were added as another category. Today, only Congress can designate NHTs and NSTs.

The BLM functions as the National trail manager for the three trails in the planning area, rather than as the National trail Administrator. The Administrator's responsibility involves trailwide coordination, guidance, technical assistance, and consultation with National Trail managers that have physical site management responsibility. National Trail administration responsibilities are fulfilled as directed in the NTSA in coordination with tribes; other National Trail Administrators; National Trail managing agencies (including all BLM public land managers along the congressionally designated National Trail); other Federal, state, and local government agencies; private and nonprofit organizations; willing landowners; land users; and individuals (tribes, affected agencies, willing landowners, partners, and interested parties). National Trail administration includes leadership in the development of the statutorily required trailwide Comprehensive Plan, which provides strategic direction for National Trail administration and management, including identification of the nature and purposes of the National Trail and selection of the National Trail Right-of-Way. The National Trail manager, which is the BLM's responsibility and is within the scope of this plan, has the authority and/or responsibility for decisionmaking for lands under its jurisdiction. The manager is the official responsible for land and water management of trail-related resources.

2.23.1 Current Condition

The LFO hosts portions of two NHTs - the Lewis and Clark National Historic Trail (LCNHT) and the Nez Perce National Historic Trail (NPNHT). The Continental Divide National Scenic Trail (CDNST) crosses public land within northern Lewis and Clark County. The NPS has management responsibility for the LCNHT and the FS has management responsibility for the NPNHT.

In 2012 the BLM drafted new manual direction for the administration and management of National Scenic and Historic Trails. Those manuals (6250 - National Scenic and Historic Trail Administration, and 6280 - Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation) define the responsibilities of the National Trail Administrator, which in the case of the trails in the planning area is not the BLM, and the public land managing agency.

Lewis and Clark National Historic Trail

The National Trails System Act of October 2, 1968, Public Law 90-543, designates the Lewis and Clark National Historic Trail as "extending from Wood River, Illinois, to the mouth of the Columbia River in Oregon, following the outbound and inbound routes of the Lewis and Clark Expedition" The Act cites the vicinity map from the 1977 Bureau of Outdoor Recreation's Lewis and Clark Trail Study Report.

Management direction for the trail comes from the *Lewis and Clark National Historic Trail Comprehensive Plan for Management and Use* (1982).

Motorized and nonmotorized travel is permitted on the LCNHT. The Missouri River corridor, where the majority of the LCNHT is located within the LFO, experiences high recreational use. With the presence of Interstate 15 and the railroad paralleling the trail, high volume transportation activity is also present.

The Missouri River above Great Falls, Montana, flows free through a scenic area, despite being paralleled and crossed by state and interstate highways. The river retains much of its historic character, resembling a large mountain stream. Public access provided by the state, and small towns make a water

trail development feasible. The Lewis and Clark Expedition ascended the river through this reach in 1805, and Sergeant Ordway, detached from Clark's contingent with nine men, descended the river here in 1806 to recover the Great Falls caches and meet Lewis.

The upstream portion of this segment flows through Wolf Creek Canyon and is provided with ample public river access and facilities. The lower portion needs expanded access and facilities at Cascade Access and Ulm City Park to establish a water trail through the entire segment. The historic site of the camp of July 10-14, 1805, where the expedition built dugout canoes after completing the Great Falls portage, could also be developed for public access, camping, and historic interpretation. This canoe camp is located on the west or north bank of the Missouri River between Ulm and Great Falls, directly south of Antelope Butte (T. 19 N., R. 2 E., Section 1).

Interpretation of expedition daily events could take place through trail guides and brochures or through onsite signing at river access areas near where the events occurred. For instance, interpretation could be provided at Wolf Creek Canyon Access No. 2 regarding the naming of Dearborn River. Also at this location, Clark began several days of overland exploration to the west of the Missouri River, traveling ahead of the expedition.

Approximately five miles of LCNHT is situated on or adjacent to BLM-administered public lands in the planning area.

Nez Perce NHT

On October 6, 1986, Congress amended the National Trails System Act of 1968 to include the 1,170-mile Nez Perce (Nee-Me-Poo) National Historic Trail (NPNHT). The Regional Forester of the Northern Region is delegated the responsibility from the Chief of the FS for the administration of the NPNHT in cooperation with other affected federal agencies.

The Nez Perce (Nee-Me-Poo) National Historic Trail Comprehensive Plan (1990) provides direction on the management and identification of resources along the trail. The FS is in the process of updating that plan.

The NPNHT crosses Oregon, Idaho, Wyoming, and Montana to its official end at Bears Paw Battlefield north of the Missouri River in Montana. The LFO manages the resources on the land the trail passes through, but the trail itself is managed by the FS. Within the LFO, the NPNHT cross three tracts of BLM land. The majority of the trail through the planning area is on private, primarily agricultural, land. No high potential segments of the trail have been identified within the planning area.

Approximately 2 miles of NPNHT is situated on, or adjacent to, BLM-administered public lands in the planning area.

Continental Divide National Scenic Trail (CDNST)

The National Trails System Act (Public Law 90-543) provides for the designation of national scenic trails "so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." Section 3(a)(2)). The CDNST is a 3,100-mile trail extending from Canada to Mexico and passing through the Rocky Mountain states of Montana, Idaho, Wyoming, Colorado, and New Mexico. A small segment of the CDNST was designated through the planning area. A cooperative agreement with the State of Montana provides for joint management of scattered state lands along the route. The FS is the lead agency for administering the CDNST.

After the passage of the NTSA, the Bureau of Outdoor Recreation, in accordance with the act, conducted a study that endorsed designation of the CDNST as a national scenic trail. The overall vision for the CDNST, as stated in the 1976 study report follows:

“The primary purpose of this trail is to provide a continuous, appealing trail route, designed for the hiker and horseman, but compatible with other land uses To provide hiking and horseback access to those lands where man’s impact on the environment has not been adverse to a substantial degree and where the environment remains relatively unaltered. Therefore, the protection of the land resource must remain a paramount consideration in establishing and managing the trail. There must be sufficient environmental controls to assure that the values for which the trail is established are not jeopardized The basic goal of the trail is to provide the hiker and rider an entrée to the diverse country along the Continental Divide in a manner which will assure a high quality recreation experience while maintaining a constant respect for the natural environment.”

Similarly, the *2009 Continental Divide National Scenic Trail Comprehensive Plan* (CMP) established the following goal: “Provide users with opportunities to view, experience, and appreciate examples of prehistoric and historic human use of the resources along the Continental Divide; examples of the ways these resources on public lands are being managed in harmony with the environment, as an asset to the existing character of the Continental Divide, and which will not detract from the overall experience of the trail.”

In recognition of the above, the CMP emphasized the importance of visual management as a key factor to ensure user enjoyment of the CDNST. The plan directed the BLM to consider the trail a high sensitivity travel route. Importantly, the trail corridor across the planning area encompasses diverse landscapes. A portion of the trail landscape encompasses areas of “high absorption capacity,” meaning activities along these could be easily located out of view. Conversely, another portion of the trail crosses a landscape that does not readily absorb contrasting activities; that is, observers traveling along this section of trail would be particularly sensitive to activities that altered the characteristic landscape. The portion of the CDNST in the planning areas travels north of Rogers Pass in Lewis and Clark County, flanking the Continental Divide. Continuing in a northwesterly direction, the trail travels into a zone with very little development or resource use. This zone contains some of the most wide open and undeveloped landscapes available on the entire CDNST. The existing RMP visual resource allocation for the trail is Class 2-4. These were established several years before the trail was designated; as a result, most of the visual resource classes do not consider the trail corridor. Visitor use by through-hikers is on a slight upward trend. Use in both 2003 and 2004 was in the range of 40 to 60 through-hikers from May through September (RMIS, 2003 and 2004). Nonthrough-hiker day use and multiple day use of the trail is low. Other recreational uses on the designated route include hiking, hunting, mountain biking, and driving for pleasure, but are not considered uses tied directly to the trail.

A trailhead was developed in the parking area at Rogers Pass in 2002. The trail uses the main site roadway before entering public land. Further analysis of the recreation and visual trends of the trail are contained in the Visual and Recreation Sections. Currently, no allowable use decisions exist on, or adjacent to, the CDNST; this situation creates conflicting mandates for managers and members of the public. A change in management is needed in order to provide a diversity of trail landscapes that meet the demands of the NTSA, the Comprehensive Report, and the subsequent CMP. This National Conservation System (NCS) landscape is not currently protected under standard mitigation guidelines or other planning decisions. Prescriptions to maintain this Congressionally-designated resource need to address the following: activities under the 1872 Mining Law, management of ROWs, oil and gas

development, management of OHVs, and historical resource protection, as well as the management of recreational use and enjoyment of the trail.

Approximately 0.75 mile of the CDNST north of Rogers Pass is situated on BLM-administered public lands in the planning area.

2.23.2 Current Management of the NHTs

After the NHTs' heyday associated with their designations, most of the trail corridors reverted to minimal use by ranchers, recreationists, hunters, etc. However, commemorative trail rides on the Nez Perce NHT and the bicentennial events surrounding the Lewis and Clark NHT from 2003 through 2006 increased the popularity of the NHTs, and use temporarily increased. At present, most of the trails are still in good to excellent condition, due in part to the remote locations of many of the segments.

The FS updated the CMP for the CDNST in 2009, and is in the process of updating the CMP for the NPNHT, while the National Park Service (NPS) is updating the CMP for the LCNHT. No high potential route segments for the LCNHT and NPNHT, as defined in the respective CMPs, exist in the planning area.

Some confusion regarding the route of the LCNHT has arisen with the NPS's release of the Interactive Trail Atlas. The new atlas shows a route that, in some areas, is distinct from the route shown in the legislation creating the trail. As the NPS finalizes their CMP, we anticipate that confusion will be eliminated.

2.23.3 Forecast

The completion of the CMPs for the LCNHT and NPNHT will incorporate new priorities from the federal government, the general public, and tribal entities who place value on the trails and their respective stories. New BLM manual direction will dictate much of the management to be employed along the trails. Identified trail corridors will enhance the management opportunities, including those areas that need to be protected through special designations or withdrawals.

Pressures on NHTs will likely increase from continued development on private land within the planning area, and indirect and cumulative impacts will continue to degrade a portion of the trails' historic and natural landscapes. Impacts to NHT resources that cannot be mitigated are expected to occur, and the historic integrity of these resources is expected to continue to degrade as time goes on.

The demand for consumptive use of NHT resources through tourism is fairly high and is anticipated to increase through time. This reflects an increasing interest in history and heritage tourism. Maintaining the historic setting is critical to providing a quality experience for visitors. The setting is an essential component in determining whether a particular trail segment contributes to the trail's overall significance.

Collecting, looting, and vandalism of NHT historic sites, which are difficult to quantify, have not been identified as problems on public land in the planning area.

New types of motorized and nonmotorized vehicles have increased the utilization of more remote parts of the NHTs. This factor has accordingly increased the vulnerability of remote NHT segments and sites through human-caused activities and degradation.

The condition trend for the CDNST is stable, with continued route development off of motorized routes designed to improve visitor experience.

As the NPS continues to improve the mapping of the LCNHT, more accurate route definitions will modify the experience of the trail users.

The FS continues to update the CMP for the NPNHT, expanding connecting routes and auto tour routes. In addition to highlighting the history of the trail, visitor use and tourism opportunities continue to expand, leading to greater interpretation of the landscape affected by the Nez Perce conflict.

2.24 WILD AND SCENIC RIVERS (WSRs)

RESOURCE CHARACTERIZATION

The National Wild and Scenic Rivers System is a system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition.

Congress enacted the Wild and Scenic Rivers Act (WSR Act) on October 2, 1968, to provide a national policy for preserving and protecting selected rivers and river segments in their free-flowing condition for the benefit of present and future generations (Section 5(d)(1) of the WSR Act (Public Law 90-542; 16 USC 12711287) directs federal agencies to consider potential wild and scenic rivers (WSRs) in their planning processes. To fulfill this requirement, the BLM inventories and evaluates rivers when it develops or revises an RMP for public lands in a specified area. Based on BLM Manual 6400, BLM will prepare a detailed study report for all rivers Congressionally authorized for study and for all other rivers identified by the BLM as potential additions to the National Wild and Scenic Rivers System through its public planning process. The WSR study process is composed of two main components: the eligibility phase and the suitability phase. The eligibility phase is conducted during the data-gathering stage of the RMP and the suitability phase is done during the formulation of the draft and proposed RMP. The eligibility phase includes identifying eligible rivers and stream segments, and assigning a tentative classification (Wild, Scenic, or Recreational). If, upon completion of the eligibility phase, any river or stream segments are found to be eligible for inclusion in the National Wild and Scenic Rivers System, a suitability study will be conducted. River or stream segments must be found eligible and suitable to be considered for designation in the National Wild and Scenic Rivers System, and only Congress or the Secretary of the Interior can designate segments.

The system consists of three types of rivers:

- **Recreation:** rivers or sections of rivers that are readily accessible by road or railroad, and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past.
- **Scenic:** rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped, but accessible in places by roads.
- **Wild:** rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Currently, there are no existing WSRs or Congressionally-designated study rivers within the planning area. The BLM completed a WSR Eligibility Study in 2010 for the western portion of the Lewistown planning area in Pondera, Meagher, Lewis and Clark, Teton, and Cascade Counties. This process identified those eligible rivers or river segments needing further study and assessment for suitability or unsuitability as potential WSRs. The study determined eligibility and tentative classification of streams in the western portion of the planning area.

The public will be given the opportunity to comment on the WSR review as part of this planning process. Reports and recommendations to Congress for inclusion of BLM-administered public lands in the National Wild and Scenic Rivers System will be based on waterways meeting established eligibility criteria and suitability factors, professional judgment, and broad public participation.

2.24.1 Current Condition

The Lewistown FO has completed the eligibility phase of a WSR study as part of its RMP revision process. This study looked only at BLM-administered public surface lands along streams and rivers in the western portion of the planning area (Teton, Pondera, Lewis and Clark, Meagher, and Cascade Counties). Private, state, and other federally-administered lands were not part of this study.

Streams containing BLM shoreline were reviewed to determine if they were free flowing and contained outstanding remarkable values to be studied. Once the initial segments were identified, standard criteria were applied to determine the eligibility of each segment.

The BLM conducted inventories of the eastern portion of the field office during the development of the *JVP RMP*. The LFO will update those initial inventories, as required during the RMP revision process.

Key Findings

In the western portion of the Lewistown FO, 78 segments were identified and evaluated and 37 segments were identified for intensive study. From these, 18 segments were determined eligible for suitability study because they were free flowing and possessed one or more outstandingly, remarkable values (Table 2-64).

Table 2-65

Stream Segments Eligible for Suitability Study (Western Half of Planning Area)

Segment Name	Portion of Segment Occurring on BLM Lands (Miles)
Blind Horse Creek	.4
Cutrock Creek	1.2
Edwards Creek	1.8
Frenchy Gulch	0.8
Middle Fork Dearborn River	1.8
Missouri River	4.7
North Fork Blindhorse Creek	2.3
North Fork Deep Creek	1.6
North Fork Sheep Creek	1.5
North Fork Stickney Creek	2.0
North Fork Teton River	0.3
Pambrum Creek	0.5
Rinker Creek	0.4
South Fork Blindhorse Creek	1.7
South Fork Sheep Creek	4.1
South Fork Stickney Creek 1	0.2
Sun River Segment 1	1.7
Sun River Segment 2	1.3

Source: Final Wild and Scenic River Eligibility Report, May 2010.

For the eastern portion of the field office, during the analysis for the *JVP RMP*, the BLM reviewed 39 rivers and streams within the planning area which may have been free flowing but did not possess outstanding remarkable values, and 2 were determined to be neither free flowing or possessing outstanding remarkable values. One segment of the Judith River was determined to be both free flowing and possessing outstandingly remarkable values. This is a 27.1 mile-long segment from Ming Coulee to the Anderson Bridge. This segment is free flowing and possesses outstandingly remarkable scenic, recreational, and geologic values. Page 31 of the approved *Judith Resource Area RMP* states: "Other segments of the Judith River have little or no public ownership and BLM lands along those segments do not possess outstandingly, remarkable values. During the evaluation process for the Judith River, the segment from Ming Coulee to Anderson Bridge was determined to be not suitable for inclusion in the National Wild and Scenic Rivers System because of severe manageability problems. These include lack of access to the area, the small, scattered BLM land pattern, and the overwhelming constraints of private land ownership and management in the area. Lack of support by any other federal, state, or local interest, combined with the small percentage of BLM land in the area, appears to make joint consideration of the area infeasible as well."

The next step in the WSR process is to determine suitability of the eligible segments. The BLM will be completing the suitability phase during the RMP revision process.

2.25 WILDERNESS STUDY AREAS (WSAs)

In 1964, Congress passed the Wilderness Act, thereby establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by the NPS and FS. With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness. To be designated as wilderness, an area must have the following characteristics:

- **Size:** roadless areas of at least 5,000 acres of public lands or of a manageable size.
- **Naturalness:** generally appears to have been impacted primarily by the forces of nature.
- **Opportunities:** provides outstanding opportunities for solitude or primitive and unconfined types of recreation.

Wilderness study areas also often have special qualities such as ecological, geological, educational, historical, scientific, and scenic values. There are no Congressionally-designated wilderness areas within the planning area; however, there are three WSAs.

As per BLM Manual 6330, the BLM's management policy is to continue resource uses on lands designated as WSAs in a manner that maintains the area's suitability for preservation as wilderness. The BLM has the responsibility to review all proposals for uses and/or facilities within WSAs to ascertain whether the proposal would impair the suitability of the WSA for preservation as wilderness. The nonimpairment standard is based on whether the use/facility is temporary or whether the use/facility will not create new surface disturbances. There are seven classes of allowable exceptions to the nonimpairment standard which include: emergencies, public safety, restoration of impacts from violations and emergencies, valid existing rights, grandfathered uses, protection or enhancement of wilderness characteristics or values, and other legal requirements.

2.25.1 Current Condition

Within the planning area, the Lewistown FO manages two WSAs (Square Butte WSA and North Fork Sun River WSA) and the Butte FO maintains one WSA (Beaver Meadows WSA). The BLM manages the public land in these WSAs so as to maintain their wilderness characteristics until they are designated by Congress as wilderness or released from wilderness status.

Square Butte WSA

The Square Butte WSA includes 1,947 acres of BLM land that is approximately 50 miles northwest of Lewistown, Montana, and 50 miles east of Great Falls, Montana. Currently, there is no legal public access to Square Butte WSA. The WSA measures 2 miles north to the south and 2.5 miles along its widest east-west dimension. None of the tract is contiguous to a designated wilderness or WSA managed by another federal agency. Private land surrounds the unit for several miles in all directions.

The WSA is geologically known as a laccolith, an intrusive bubble of magma that has penetrated layers of the earth's crust. Erosion of the upper portions has created a flat-topped mound of igneous rock surrounded by eroded spires and ribs of the same rock at the base. Scenically, with its soaring buttresses, interesting pinnacles and spires, and varied textures, the butte is an imposing sight. The level top and vertical sides present a "square" appearance from a distance.

The formation rises 2,400 feet above the surrounding plains, with an elevation on top of 5,684 feet. Two massive fins stretch toward the plain to the southwest, and jutting towers and spire fill the butte's south-half flanks. Square Butte and another laccolith (Round Butte, 3 miles to the west) are outlying formations of the Highwood Mountains.

Two-thirds of Square Butte's flat top burned in 1956, but this portion has reforested itself with thick lodgepole pine. Dense stands of lodgepole, limber pine, and Douglas fir cover the side slopes.

North Fork Sun River WSA

The North Fork Sun River WSA is 196 acres and is located approximately 24 miles southwest of Choteau, Montana, and 18 miles northwest of Augusta, Montana. Access from the east is through private lands with permission from the owner or from the west through the Lewis and Clark National Forest. The WSA is bounded on the west by FS Lewis and Clark National Forest. The north, south, and east boundaries of the WSA are adjacent to private lands.

The WSA lies within the transitional zone between the prairies to the east and the Rocky Mountains to the west at an elevation of approximately 5,200 feet. It is an area of gentle foothills slopes of grass and scattered limber pines. It contains two converging drainages with four associated ponds, riparian plant communities, and aspen stands.

Beaver Meadows WSA

Beaver Meadows WSA is a 595-acre section of public land located 15 miles southwest of Augusta, Montana. The WSA borders the eastern portion of the Rocky Mountain Front. The WSA is also bordered to the north, south, and east by private lands.

The unit is composed of the rugged, eastern cliff face of Steamboat Mountain and headwaters of a minor drainage that empties eastward into the Dearborn River. The cliff covers approximately 20 percent of the WSA; thick stands of Douglas fir cover most of the remainder of the area. There is also a 2-acre meadow and one-half of a 2-acre glacial pond within the WSA in the northeastern corner.

Elevations range from 5,440 feet on the eastern border to 7,680 feet near the top of Steamboat Mountain to the west.

2.26 OUTSTANDING NATURAL AREAS (ONAS)

RESOURCE CHARACTERIZATION

The *Headwaters RMP/EIS*, July 1984, and the subsequent ROD designated four ONAs on the Rocky Mountain Front, Teton County, Montana (see Map 10). The scenic quality, wildland resources, and wildlife significance were the primary values that resulted in designating these areas as ONAs.

The *Headwaters RMP/EIS* was amended in December 1986 to include a special designation of recently acquired land along the Rocky Mountain Front. The BLM acquired 1,041 acres of lands near the existing Ear Mountain ONA and subsequently combined 1,029 acres with the Ear Mountain ONA. A trailhead and multiple-use area were designated on 12 acres to provide public access. Management actions on the newly acquired northern unit were consistent with other ONA designations along the Rocky Mountain Front.

The following ONAs were designated by the *Headwaters RMP* (1984) and *Special Designation RMP Amendment* (1986):

- Blind Horse: 4,927 acres
- Ear Mountain: 1,869 acres
- Chute Mountain: 3,205 acres
- Deep Creek-Battle Creek: 3,086 acres

Total: 13,087 acres

The *Headwaters RMP/EIS* (1984) and *Special Designations RMP Amendment* (1986) established broad management direction for these ONAs to "protect the wildlife habitat, scenery and other surface resources from disturbance" and "to ensure they are managed essentially as wilderness."

The *Final Rocky Mountain Front Outstanding Natural Area Activity Plan/Environmental Assessment (ONA AP/EA)* (1989) provided specific objectives, constraints, and management policy for all proposed actions on the ONAs. The activity plan did not amend the *Headwaters RMP*, but provided site specific policy management direction for the ONAs.

The interagency Rocky Mountain Front Wildlife Monitoring/Evaluation Program was initiated in 1980. A principal goal of this program was to sponsor study efforts whereby wildlife management guidelines, based on sound scientific findings, could be developed to aid land managers in their planning of human activities along the Rocky Mountain Front. The Rocky Mountain Front Management Guidelines were incorporated into the preferred ONA management plan.

2.26.1 Current Condition

The four ONAs adjoin the western edge of the Lewis and Clark National Forest. The Bob Marshall Wilderness, administered by the FS, lies about 6 miles west of the ONAs. The ONAs are located approximately 19 miles west of Choteau, Montana, along the Rocky Mountain Front Range. The ONAs comprise approximately 75 percent of BLM's public land surface along the Rocky Mountain Front and provide the most opportunity for wildlife and natural resource management.

The Rocky Mountain Front rises dramatically from the plains. Elevation changes are precipitous and range from 5,100 to 7,700 feet on the ONAs. The ONAs are characterized by steep, rocky cliffs; narrow, deep canyons; talus slopes; open meadows; shrub-grasslands; and numerous perennial and ephemeral streams. Massive limestone formations, including pinnacles, dominate many vistas. Most of the ONAs are forested with limber pine, Douglas fir, subalpine fir, and aspen. Alpine meadows, foothills prairie, and barren areas support mountain shrubs, sedges, grasses, numerous flowering perennials, and forbs.

Some prominent geographic features of the ONAs include: Blind Horse Creek, Chute Mountain, the North and South Forks of Deep Creek, Deep Creek Canyon, Willow Creek, Edwards Creek, Battle Creek, Timber Gulch, and Ear Mountain.

The Rocky Mountain Front Range is a nationally-significant wildlife area recognized for the large numbers of important wildlife species it supports as well as for the critical habitats it provides.

The ONAs have a high overall wilderness quality. They are nearly pristine, with outstanding opportunities for both solitude and primitive recreation. There are few human intrusions evident today, although heavy equipment used for seismic work in the early 1950s left visible scars. A limited number of internal access trails and primitive vehicle ways exist on all the ONAs. Various livestock fences and range improvement projects also exist on active grazing allotments within all four ONAs. Appendix I is a summary of ONA resources and current ONA restrictions.

SOCIAL AND ECONOMIC

2.27 SOCIAL AND ECONOMIC CONDITIONS

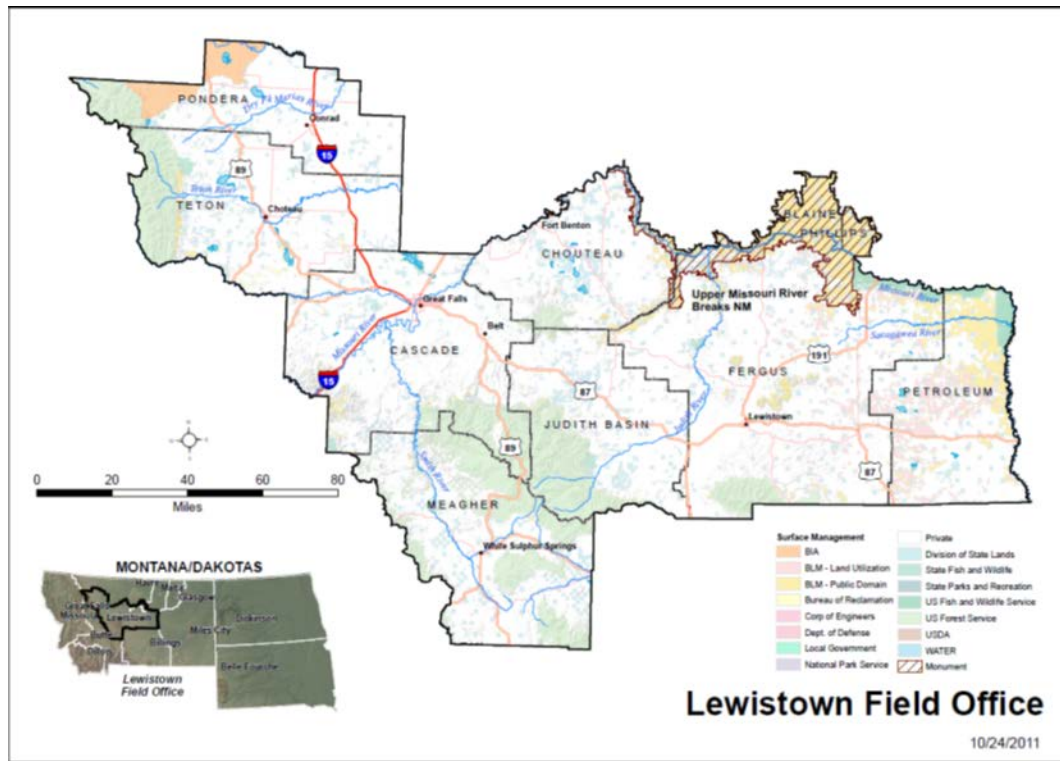
Certain defining features of every area influence and shape the nature of local economic and social activity. Among these are the local populations; the presence of, or proximity to, large cities or regional population centers; types of long-standing industries such as agriculture and oil and gas; predominant land and water features; and unique area amenities. The Lewistown FO operates as a steward of many of these area resources and opportunities and thus plays a role in the community. This discussion gives further insight on the character and extent of these community connections.

The economic analysis focuses on goods and services from BLM lands within the LFO. These lands contribute a wide range of economic values to people. Market goods, such as livestock and recreation, generate employment and income as well as payments to local communities and some revenue for the federal treasury. Nonmarket goods, such as unique ecosystems and habitats, generate value everyone reaps, but do not necessarily pay for. Other goods, such as outdoor recreation and scenery, are valued by the people who use them, but only a portion of this value is represented in market purchases.

In order to accurately portray the relationship of current BLM management and the community, the social and economic geographic scope of analysis must be defined. The social and economic effects from changes on BLM lands extend beyond the immediate vicinity of their location in the LFO. In addition, the role of these lands within the larger region must be addressed while not masking change within smaller counties and communities in the analysis area. A multi-dimensional approach is thus appropriate, examining both the role of the LFO lands at a regional scale and smaller county level scale. Consequently, social and economic conditions and trends are presented for the eight-county area that the LFO encompasses (Cascade, Chouteau, Fergus, Judith Basin, Meagher, Petroleum, Pondera, and Teton Counties). Note that the LFO social and economic analysis area is not entirely synonymous with the Lewistown RMP planning area. The northern portion of Lewis and Clark County is not included

within this analysis, while lands within the UMRBNM are included in the analysis area but are not part of the planning area.

Figure 2-18
Social and Economic Analysis Area Counties (Excluding Lewis and Clark County)

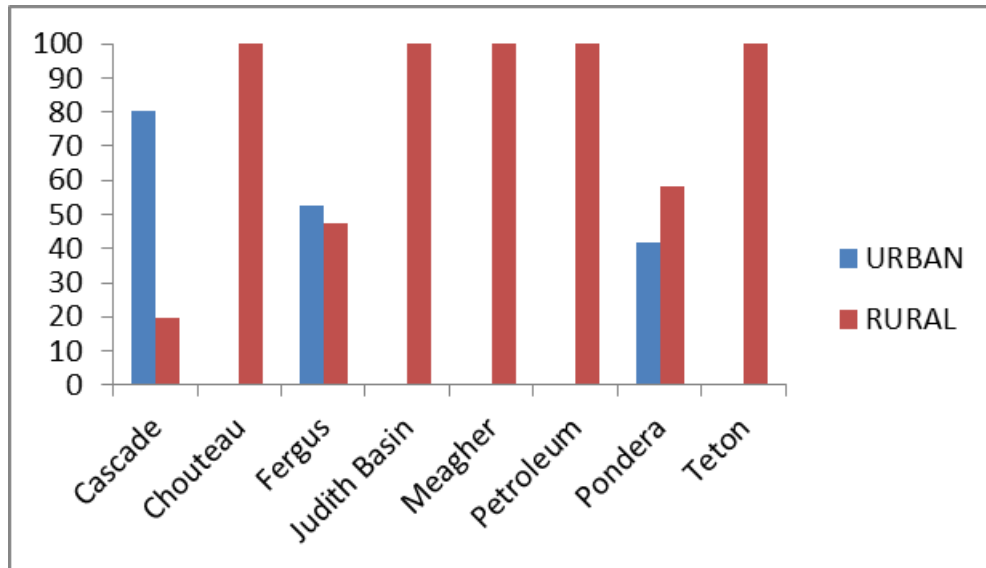


Urban/Rural Mix and Land Use

It is important to understand how the land is developed in order to guide management for the LFO. As of 2010, Cascade, Fergus, and Pondera Counties were the only counties in the LFO area that had a portion of their population living in urban areas¹ (80, 53, and 42 percent, respectively). The remainder of the population lives in rural areas (US Department of Commerce, 2010).

¹ To qualify as an urban area, the territory identified according to US Census criteria must encompass at least 2,500 people, at least 1,500 of which reside outside institutional group quarters (US Department of Commerce, 2010).

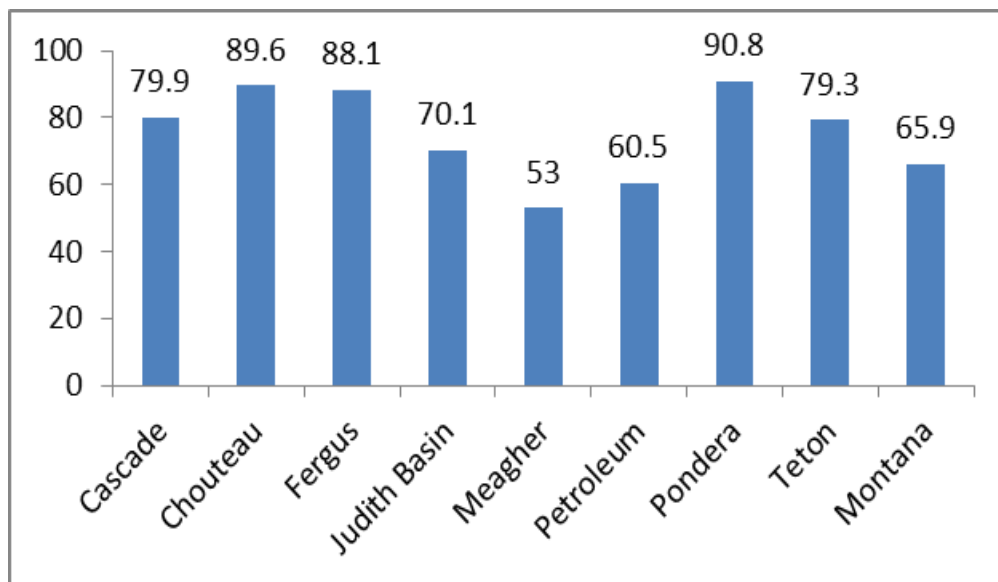
Figure 2-19
Percent of Population in Urban and Rural Areas, 2010



Source: US Department of Commerce, 2010.

To illustrate the characteristics of rural development in the eight-county LFO area, it is helpful to know the amount of land in farms. As displayed in Figure 2-20 below, in 2007, all eight counties had at least 50 percent of their land in farms, with the highest proportion of land in farms in Pondera County (90.8 percent) (USDA, 2007).

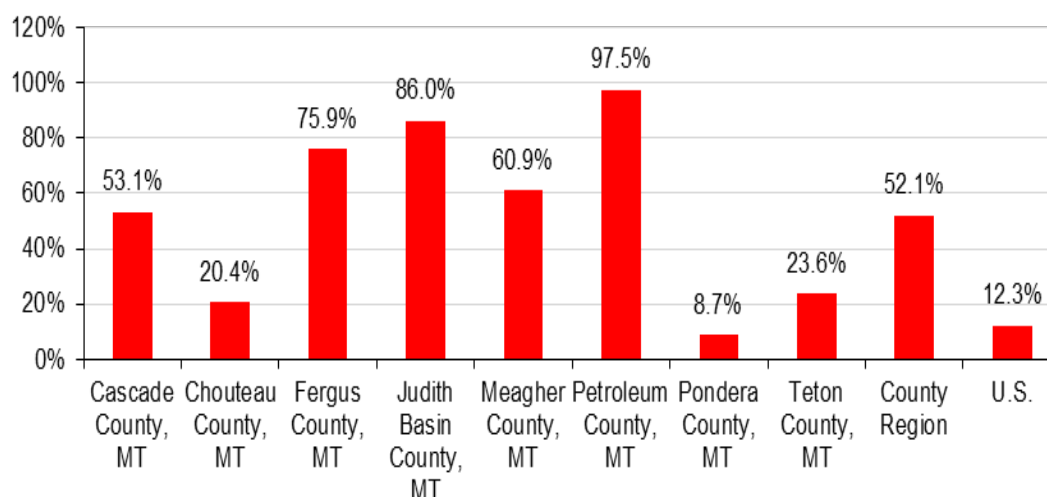
Figure 2-20
Proportion of Total Land Area in Farms, 2007



Source: USDA, 2007.

The rate of development is also a key in understanding land use. The total residential land, as a portion of the total private land, has increased significantly in all counties in the LFO area from 2000 to 2010, as seen in Figure 2-21. Petroleum County had the largest percent change in residential development (97.5 percent), compared to a 52.1 percent change for the LFO region² (Theobald, 2013).

Figure 2-21
Percent Change in Area, Total Residential Development on Private Land, 2000-2010



Source: Theobald, 2013.

Federal land ownership is less in the eight-county LFO region than the national level of 28.8 percent. Federal land in the eight-county area comprises 18.9 percent of all lands, private land comprises 72.1 percent, and state land is 7.5 percent. Pondera County has the highest amount of tribal land (15.6 percent). The BLM manages 254 million acres of land in the US, of which 704,859 acres are within the LFO region (5.4 percent of federal land in the eight-county area). The FS holds the highest amount of federal land in the LFO region (12.5 percent of federal land in the region or 1.6 million acres) (USGS, 2012).

Population and Demographic Change

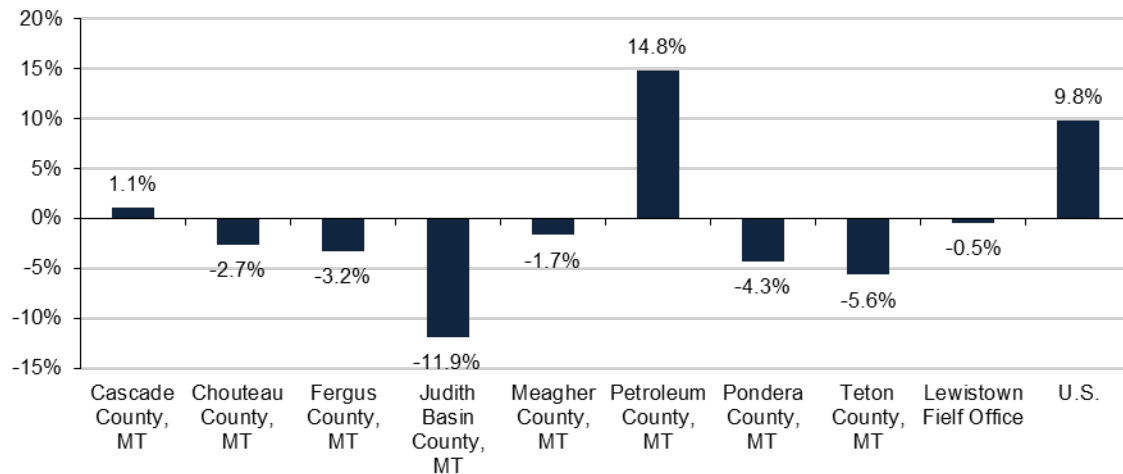
In general, the LFO region has experienced population losses since 1970. Between 1970 and 2011, the populations for Cascade, Chouteau, Fergus, Judith Basin, Meagher, Petroleum, Pondera, and Teton Counties declined by 0.5, 10.3, 8.9, 25, 9.7, 27.8, 6.7, and 0.7 percent, respectively, while the entire region declined by 3.1 percent. From 2000 to 2012, the population increased in Cascade County by 1.1 percent and in Petroleum County by 14.8 percent.³ In 2012, Petroleum County's population was 566 persons, the lowest in the LFO, and the highest population was in Cascade County at 81,248 persons. The total population for the eight-county region in 2012 was 115,313 persons. The population

² Residential development is defined as cumulative acres of land developed at an average residential lot size of 40 acres or less (Theobald, 2013).

³ The data for Petroleum County indicates high variability because estimates of populations for less populated areas tend to have lower accuracy (US Department of Commerce, 2013).

decreased in Chouteau, Fergus, Judith Basin, Meagher, Pondera, and Teton Counties by 2.7, 3.2, 11.9, 1.7, 4.3, and 5.6 percent, respectively. Over this period, the population in the eight-county area declined by 0.5 percent – well under the national increasing growth rate of 9.8 percent and the state rate of 9.8 percent (US Department of Commerce, 2013).

Figure 2-22
Population Change, 2000-2012



Source: US Department of Commerce, 2013.

Table 2-66
Population Change, 2000-2012

Location	Population 2012	Population 2000	Population Change	Percent Change
United States	309,138,711	281,421,906	27,716,805	9.8%
Montana	990,785	902,195	88,590	9.8%
Lewistown FO	115,313	115,843	-530	-0.5%
Cascade County	81,248	80,357	891	1.1%
Chouteau County	5,811	5,970	-159	-2.7%
Fergus County	11,507	11,893	-386	-3.2%
Judith Basin County	2,052	2,329	-277	-11.9%
Meagher County	1,900	1,932	-32	-1.7%

Location	Population 2012	Population 2000	Population Change	Percent Change
Petroleum County	566	493	73	*14.8%
Pondera County	6,147	6,424	-277	-4.3%
Teton County	6,082	6,445	-363	-5.6%

* The data for Petroleum County indicates high variability because estimates of populations for less populated areas tend to have lower accuracy.

Source: US Department of Commerce, 2013.

Between 2000 and 2012, populations of age groups from 18 and up increased with the exception of the age group 35-44, which decreased by 4.7 in their share of total population. The share of the population under 18 decreased by 3.5 percent. The age group that increased the most was 45 to 64, which rose by 5,373 persons, while those aged 35 to 44 showed the largest decrease - decreasing by 5,538 persons (US Department of Commerce, 2013).

As of 2012, census indicated that the racial composition of the eight-county region was much less diverse than national populations, with nearly 90 percent of residents identifying themselves as white alone. Although most county shares of several racial and ethnic groups are below national shares, individuals identifying themselves as American Indian alone in the eight-county area were better represented than the national average (at 0.8 percent) at approximately 5 percent of the total population in the region. Individuals represented as American Indian alone had the highest numbers in Chouteau County (20.7 percent of total population) and Pondera County (14.3 percent). The percentage of local residents identifying themselves with a Hispanic origin made up about 3 percent of the total population in the area compared to 16.4 percent national average (US Department of Commerce, 2013).

Economic Specialization and Employment

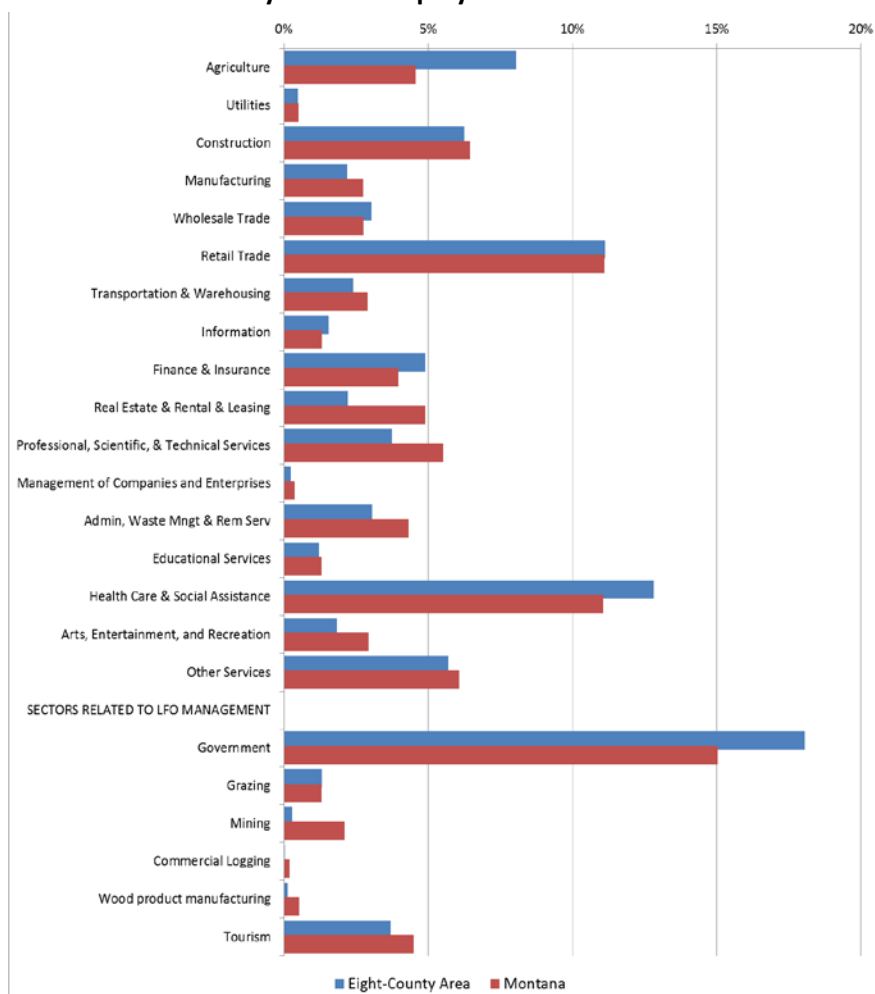
Total employment within the eight-county region is distributed amongst a range of industry sectors and is displayed below in Figure 2-23 (IMPLAN, 2014). Of particular interest is employment in sectors related to LFO management seen in the bottom six categories of Figure 2-23. The LFO management is not attributable to all employment in these sectors, but rather smaller portions examined later in the RMP planning process (i.e., Community Economics Strategies Workshop and RMP Draft EIS).

Information on employment is used to examine specialization in particular sectors of the eight-county region. Identification of employment specialization within the project area counties provides a frame of reference for contributions from BLM management. Specialization is examined using the ratio of the percent employment in each industry in the region of interest (eight-county area) to the percent of employment in that industry for a larger reference region (the State of Montana). For a given industry, when the percent employment in the analysis region is greater than in the reference region, local employment specialization exists in that industry (FS, 1998). Of particular interest are counties where specialization occurs within industries related to LFO management seen in the bottom six categories of Figure 2-23. The government sector includes all federal, state, and local employment while the grazing sector includes cattle ranching and animal production, excluding cattle, poultry, and eggs. It should be noted that the contributions from the LFO represent only a portion of the economic activity reflected in industry sectors seen in Figure 2-23.

The tourism sector is meant to convey the importance of tourism to the LFO region. The US Department of Commerce has defined tourism industry ratios (Zemanek, 2013). Tourism ratios express the proportion of sector output that is consumed by travelers more than 50-100 miles from home. For example, the ratio for food and beverage retail stores is 0.03, meaning that about 3 percent of restaurant meals are sold to tourists nationwide. Industry ratios have been matched with IMPLAN sectors following Creason (2000), and Warziniak and Creason (2001). The industry ratios were then multiplied by employment and labor income in the corresponding IMPLAN sectors to estimate total tourism employment and labor income by sector.

Using this criterion applied with 2012 data, project area counties can be characterized as most specialized with respect to the agriculture, health care and social assistance, and government sectors (shares of total employment in these sectors are respectively 3.5, 1.8, and 3 percent greater than shares in the state) (IMPLAN, 2014).

Figure 2-23
Analysis Area Employment Distribution

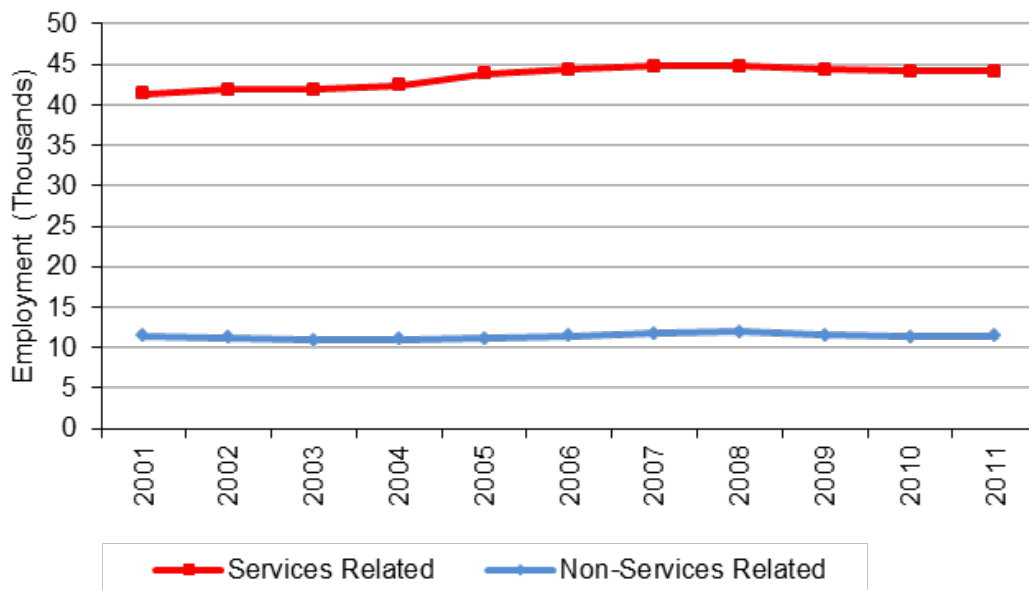


Source: IMPLAN, 2014.

Between 2000 and 2011, total employment in the eight-county area has increased from 67,620 to 70,287 jobs. Much of this growth is attributable to the employment in services-related jobs shown in

Figure 2-24 below, where total employment in the project area counties is disaggregated into two broad industry groupings: services-related sectors and nonservices-related sectors⁴. Services related sectors consist of the following sectors: utilities, wholesale trade, retail trade, transportation and warehousing information, finance and insurance, real estate and rental and leasing, professional, scientific and tech., management of companies and enterprises, administrative and Support services, educational services, health care and social assistance, arts, entertainment, and recreation, accommodation and food Services, and other Services. Nonservices related sectors consist of the following sectors: mining, construction, manufacturing, and agriculture, forestry, fishing, and hunting (EPS-HDT, 2014).

Figure 2-24
Services and Nonservices Employment History for Lewistown Field Office Area



Source: US Department of Commerce, 2013b, Table CA25.

From 2001 to 2011, employment in services-related sectors as a share of total employment increased from 61.5 percent to 62.9 percent while employment in the nonservices-related sectors as a share of total employment decreased from 17 percent to 16.3 percent.⁵ There was a 6.9 percent increase in services-related jobs and a 0.2 percent increase in nonservices-related jobs. Although these figures were estimated differently, the conclusion is that the services-related sectors have historically been an important part of the area economy and have increased in importance (US Department of Commerce, 2013b).

⁴ The numbers are not directly comparable to the IMPLAN numbers in Figure 2-23 since IMPLAN data include government, farm, and proprietor employment in addition to wage and salary employment. The IMPLAN data also includes estimates for nondisclosures that similarly include farm and proprietor employment in addition to wage and salary employment.

⁵ Headwaters Economics used supplemental data from the US Department of Commerce to estimate the data gaps that were present in the figures. For this reason, the numbers may not match the data provided directly by the US Department of Commerce.

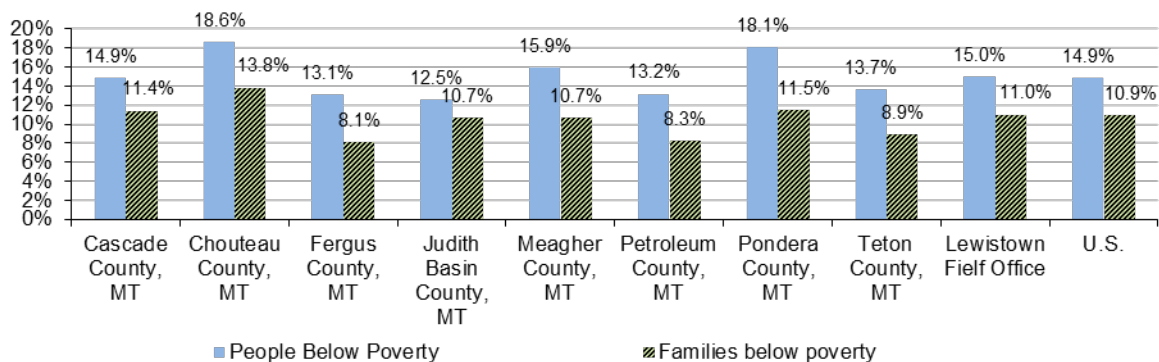
Economic Well-Being and Poverty

As noted above, the services-related sectors have increased in their share of total employment while the nonservices-related sectors experienced decreases or little change in their share of total employment. In general, the service-related sectors do not pay as much as the nonservices sectors, thus increases in the percent of total employment attributable to these sectors could decrease area economic well-being. Within the eight-county area, the services- and nonservices-related sectors paid average annual wages of \$31,974 and \$43,324, respectively in 2012 (US Department of Labor, 2013b). Thus, increases in employment in sectors associated with lower wages alongside decreases in sectors associated with higher wages could indicate a decrease in area economic well-being. However, we cannot say that decreases in economic well-being have resulted from increases in service-related sector employment, since higher labor force participation in the services-related sectors, by groups such as women and minorities, could increase the overall importance of certain sectors over others. In addition, people might move to the area to take a services-related sector job but exchange the lower wage they may receive for the unique natural and cultural amenities. In this manner, some may benefit from a “secondary income” not provided by their place of employment but by the benefits they gain from living in the area. Population and employment changes are related to natural amenities (Knapp and Graves, 1989; Clark and Hunter, 1992; Treyz, et al., 1993; Mueser and Graves, 1995; McGranahan, 1999; and Lewis, et al., 2002) often provided by public lands. The LFO operates as a steward of many of these natural amenities and consequently supports a portion of area population and employment growth.

Total personal income (TPI) and per capita personal income (PCPI) are useful measures of economic well-being. From 2000 to 2012, TPI in the economic analysis area increased from \$3.7 billion to \$4.7 billion. Annual PCPI increased from \$32,053 to \$39,982 from 2000 to 2011 (all measures adjusted for inflation to 2013 dollars). This translates to a TPI increase of 27.6 percent and a PCPI increase of 24.7 percent over this time period (US Department of Commerce, 2013b). While PCPI is a useful measure of economic well-being, it should be examined alongside changes in real earnings per job. Since PCPI includes income from 401(k) plans as well as other nonlabor income sources like transfer payments, dividends, and rent, it is possible for per capita income to rise, even if the average wage per job declines over time. While PCPI rose between 1970 and 2011 by 64 percent, average earnings per job declined by 2 percent (from \$44,107 in 1970 to \$43,213 in 2011, values adjusted for inflation to 2013 dollars) (US Department of Commerce, 2013b). While PCPI has steadily increased, real earnings per job have historically been declining since the 1970s until increasing again in the past decade.

From 2000 to 2012, average annual unemployment rates in the analysis area increased from 4.9 to 5.3 percent (US Department of Labor, 2013). New jobs created in an area are filled from two principal sources; local unemployment and in-migration. If unemployment remains high, new jobs are likely to be filled by local area residents; however, if unemployment falls, new jobs could be filled more often by new area residents. Estimates of the share of people living under the poverty level in the eight counties in the LFO are shown in Figure 2-25. The state share of people below the poverty level in 2012 was 14.8 percent and families below poverty was 9.8 percent (US Department of Commerce, 2013).

Figure 2-25
Individuals and Families below Poverty, 2012



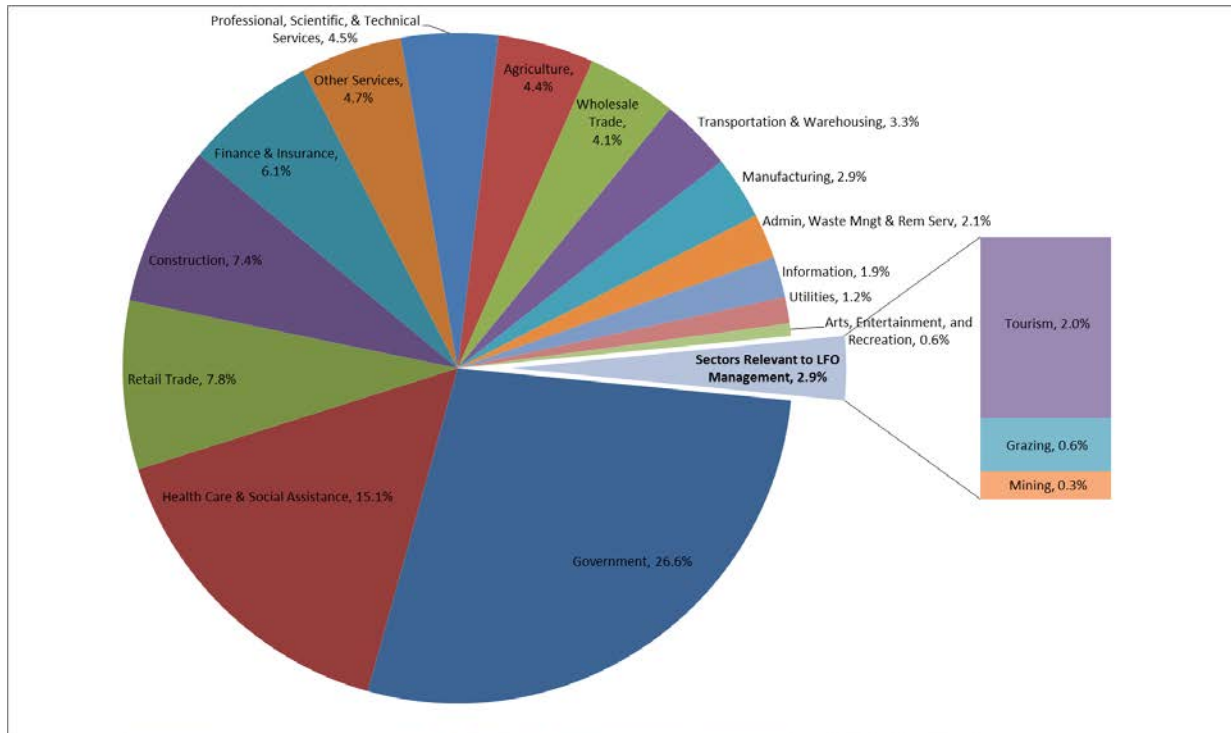
Source: US Department of Commerce, 2013.

Components of Personal Income

Further examining trends within personal income provides insight to the area economy and its connection to the LFO lands. There are three major sources of personal income: (1) labor earnings or income from the workplace; (2) investment income, or income received by individuals in the form of rent, dividends, or interest earnings; and (3) transfer payment income or income received as Social Security, retirement and disability income, or Medicare and Medicaid payments.

Labor earnings were the largest source of income in the eight-county area, accounting for 56.1 percent of all income in 2012 (US Department of Commerce, 2013b). The government and health care and social assistance sectors were the largest components of labor income in 2012 in the eight-county area (Figure 2-26 below). It should be noted that the contributions from the LFO represent only a portion of the economic activity reflected in industry sectors seen in Figure 2-26. The labor earnings for real estate and rental and leasing, management of companies and enterprises, and educational services contributed less than 1 percent of total labor earnings so they were excluded from Figure 2-26. Of the industry categories relevant to LFO management, commercial timber and wood product manufacturing made up 0.1% or less of total labor earnings in 2012 so they were also excluded from Figure 2-26.

Figure 2-26
Eight-county Area Labor Income Distribution, 2012



Source: IMPLAN, 2014.

Labor earning's share of TPI in the LFO area has decreased from 1970 to 2012 (from 76.6 to 56.1 percent) while the share of nonlabor income has risen (from 23.4 to 43.9 percent). As a share of TPI, investment income and transfer payments rose from 15.1 to 24.6 and 8.3 to 19.3 percent, respectively, over this 42-year time period (US Department of Commerce, 2013b).

These patterns reflect the importance of the aging population, who are more likely to have investment earnings than younger adults. As the population of the area continues to age, the share of income from these nonlabor sources should continue to rise as long as residents continue to stay in the area after retirement or new retirees move in. The development of rural recreation and retirement-destination areas are related to natural amenities (Knapp and Graves, 1989; Clark and Hunter, 1992; Treyz, et al., 1993; Mueser and Graves, 1995; McGranahan, 1999; and Lewis, et al., 2002) often provided by public lands. The LFO operates as a steward of many of these natural amenities and consequently supports a portion of nonlabor income.

Nonmarket Economic Value

The value of resource goods traded in a market can be obtained from information on the quantity sold and market price; however, markets do not exist for some resources such as recreation opportunities and environmental services. Measuring their value is important since, without estimates, these resources may be implicitly undervalued and decisions regarding their use may not accurately reflect

their true value to society. Because these recreational and environmental values are not traded in markets, they can be characterized as nonmarket values.

Nonmarket values can be broken down into two categories, use and nonuse values. The use value of a nonmarket good is the value to society from the direct use of the asset; within the LFO this occurs through recreational activities such as hiking, bird watching, and OHV use. The use of nonmarket goods often requires consumption of associated market goods, such as lodging and gas.

Nonuse, or passive use, values of a nonmarket good reflect the value of an asset beyond its current use. These can be described as existence, option, and bequest values. Existence values are the amount society is willing to pay to guarantee that an asset simply exists. An existence value for the LFO might be the value of knowing that undisturbed native plant habitat exists or the value associated with undeveloped scenic landscapes. In addition to implicit existence values, society's willingness to pay to preserve resources for future use attaches additional passive use values. The potential benefits people would receive from future use are referred to as option values when future use is expected to occur within the same generation and bequest values when preservation allows future generations to benefit from resource use. Within the LFO, bequest and option values might exist for numerous plant species, undeveloped scenic landscapes, wild and scenic rivers, heritage sites, and recreational trails.

While use and nonuse values exist for BLM in the LFO, valuation is not always feasible during the planning process; however, this does not preclude their consideration. Other public involvement efforts for projects in the LFO indicate that nonmarket values exist for recreation opportunities, land uses of traditional and cultural importance, and natural amenities managed by the LFO.

2.28 TREATY RIGHTS AND TRIBAL INTERESTS

Seven American Indian reservations are located in Montana: Flathead (Confederated Salish and Kootenai), Blackfeet (Blackfeet Nation), Rocky Boy's (Chippewa Cree), Fort Belknap (Gros Ventre and Assiniboiné), Fort Peck (Assiniboiné and Sioux), Northern Cheyenne (Northern Cheyenne), and Crow (Crow Nation). In addition, other tribes in adjacent states have an interest in the RMP planning area because of the presence of the Nez Perce NHT (Shoshone-Bannock and Nez Perce). The Little Shell Tribe of Chippewa, based in Montana, is not federally recognized but is based within the boundaries of the LFO. Tribal members are also interested in visiting the sites of plant and mineral collecting sites and burial sites to learn more about these aspects of their history.

The following is a list of American Indian tribes who have an interest in the LFO RMP planning area. Numerous places within the planning area historically were utilized by these tribes for natural resources foraging, hunting subsistence, habitation, and spiritual and religious ceremonies. Practices that continue today, particularly along the Rocky Mountain Front, include visiting these areas for plant and mineral gathering; traditional camp and ceremonial sites; and burial areas.

American Indian Tribes with Interest in LFO RMP Planning Area

- Crow Nation
- Fort Belknap Assiniboiné and Gros Ventre
- Fort Peck Assiniboiné and Sioux
- Northern Cheyenne
- Rocky Boy Chippewa Cree
- Blackfeet Nation
- Salish-Kootenai
- Shoshone-Bannock

- Nez Perce

Listed at the following website <http://digital.library.okstate.edu/kappler/vol2/toc.htm> are the treaties which the United States made with the tribes listed above.

Treaties are negotiated contracts made pursuant to the Constitution of the United States and are considered the “supreme law of the land.” They take precedence over any conflicting state laws because of the supremacy clause of the Constitution (Article 6, Clause 2). Treaty rights are not gifts or grants from the United States, but are bargained-for concessions. These rights are grants-of-rights from the tribes, rather than to the tribes. The reciprocal obligations assumed by the federal government and Indian tribes constitute the chief source of present-day federal Indian law.

The United States and represented agencies, including the BLM, have a special trust relationship with Indian tribes because of these treaties. The BLM also has the responsibility to ensure that meaningful consultation and coordination concerning tribal treaty rights and trust resources are conducted on a government-to-government basis with federally recognized tribes.

2.29 ENVIRONMENTAL JUSTICE

Environmental justice pertains to the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic groups, should bear a disproportionate share of the adverse environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies (BLM, 2005a).

The BLM does not manage environmental justice resources; rather, it manages public lands and the resources and uses that occur on them. However, the BLM does incorporate environmental justice into its planning process, both as part of the environmental analysis and in making sure minority and low-income populations have a meaningful role in the decision-making process. In considering environmental justice, it is important to recognize that both local residents and transitory low-income and minority populations may be users of public lands. The BLM does not have data for nonarea users of the public land identified as low-income and minority population.

Because of the lack of good data concerning low-income and minority populations from resident outside of the planning area, this section focuses on residential demographics since these are the data available in the profiles that comprise the AMS. Instructional Memorandum (IM) 2002-164 defines minority persons as “Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other nonwhite persons.” Furthermore, IM 2002-164 indicates that an area should be considered to contain a minority population where either the minority population of the affected area exceeds 50 percent, or the percentage of minority population in the affected area is meaningfully greater than the percentage in the general population.

The Council on Environmental Quality (CEQ) guidance for environmental justice analysis under NEPA defines a “low-income population” as “either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect” (CEQ, 1997).

Although CEQ guidance does not provide a quantitative threshold (e.g., a limit on the percent of persons in poverty) for determining whether a population should be considered a low-income population,

typically the percent of persons in poverty in the study area is compared to that in a comparison area such as the state. Quantitative criteria for what constitutes a low-income population are not specified in the BLM, CEQ, or EPA guidance.

2.30 PUBLIC SAFETY

Sources of data include field surveys and inspections, GS reports and maps, US Bureau of Mines reports, and MBMG reports and databases.

Public safety includes the management actions of the Abandoned Mine Lands (AML) and Hazardous Materials Management (HMM) programs. Hazardous materials represent a significant risk to public safety, human health, and the environment and are, therefore, important issues that warrant the attention of the BLM management. Hazardous materials management also involves the prevention of illegal, hazardous materials actions on public lands; the proper use, authorization, permitting, and regulation of hazardous materials on public lands; and timely, efficient, and safe responses to hazardous materials incidences on public lands.

The HMM and the AML programs in the planning area have seen limited activity toward cleaning up lands affected by mining. Other AML hazards within the planning area lands have only been investigated to a limited extent, and the specific hazards have not been documented. Currently, the preeminent concern of the AML program in the planning area is identifying and mitigating physical hazards on lands affected by mining practices.

Typical hazardous materials issues within the planning area are associated with past mining activities, illegal dumping, and accidental material releases from transport vehicles

Not all AML sites include conditions that are hazardous to humans or the environment. However, the physical hazards that may be encountered at AML sites include basic trip and fall hazards from debris, obscure mine shafts, dilapidated mine buildings and equipment, harmful chemicals or contaminated soils, unused explosives, and open mine adits with oxygen-depleted or toxic environments. The potential for injuries and deaths from these hazards increases with the growth of the western population and recreational use of public lands. Therefore, sites easily accessed by the public are given first priority for implementation of mitigation or closure measures.

When hazardous conditions are present at AML sites, they can include both onsite and offsite impacts. Mine wastes on AML sites may affect or preclude the growth of vegetation on site and give rise to fugitive dust with hazardous heavy metal constituents when disturbed. Water quality issues may come from the direct flow of heavy metals-laden water out of mine adits or leaching from mined materials contributing undesirable heavy metal constituents to nearby stream and river subbasins. Heavy metal constituents can adversely affect many aquatic species and also may adversely affect avian and mammalian species around such mine sites and drainages via direct and indirect routes of intake. The metals associated with the mining activities in the planning area are primarily gold, silver, lead, zinc, copper, and arsenic.

The LFO responds to a few instances of illicit dumping on BLM-administered lands. Much of the illicit dumping activity within the planning area is intentional, small quantity waste dumping. Illicitly dumped materials may include hazardous substances, household wastes, petroleum products, solid waste, and agricultural materials. Illicit dumping may occur anywhere on BLM-administered lands, but is generally concentrated around recreation areas and alongside roadways. These dumping incidents normally do not fit the specific category of hazardous waste dumping, but the dumped materials are normally screened for hazardous components, then all of the materials are removed and appropriately disposed.

Overall, instances of significant or hazardous dumping on BLM lands are fairly limited, which is attributed to the relatively low population density around the public lands.

The LFO has responded to a number of vehicular accidents that involve the accidental release of hazardous materials or petroleum products from transport vehicles. The HMM program can become involved with a particular response action or cleanup when the release affects BLM-administered lands.

In recent years, the BLM has responded a number of times to dumped methamphetamine lab wastes, or related drug wastes, on its administered lands. Methamphetamine drug lab wastes are frequently found to include highly toxic chemicals, flammable materials, and potentially explosive materials. Discarded drug paraphernalia is also a concern as it can include wastes that present a skin puncture/disease transmission hazard. Methamphetamine drug lab wastes present a direct health and safety hazard to individuals who may inadvertently come across them and also present a hazard to wildlife.

Hazardous materials may legitimately be brought onto BLM-administered lands for weed control or resource development. The types of hazardous materials used for weed and insect control include pesticides (herbicides and insecticides). The general types of hazardous materials that may be used include petroleum products (fuels and lubricants), solvents, surfactants, paints, explosives, batteries, acids, gases, antifreeze, and mineral products (mine waste, cement, and drilling materials). Another source of hazardous materials is from actions involving ROWs, leases, and permits. Examples of these types of actions are onsite storage and use of fuels (oil and gas), telecommunication sites, and transportation facilities.

CHAPTER 3

CURRENT MANAGEMENT DIRECTION

3.1 RELEVANT PLANS AND AMENDMENTS

Management decisions are currently based on the *Headwaters Resource Management Plan (RMP)*, approved in July 1984 and the *Judith Resource Area RMP (Judith RMP)*, approved in September 1994, as amended.

Table 3-1

Planning Documents and Decisions within the Lewistown RMP Planning Area

Document Title	Year
<i>Petroleum Management Framework Plan</i>	11/1977
<i>Fergus Management Framework Plan</i>	01/1978
<i>Headwaters Resource Management Plan and Environmental Impact Statement</i> <i>Final EIS</i> <i>Record of Decision</i>	11/1983 07/1984
<i>Vegetation Treatment on BLM Lands in Thirteen Western States: Final Environmental Impact Statement*</i>	07/1991
<i>Montana Statewide Wilderness Study Report</i>	09/1991
<i>Judith Resource Management Plan and Environmental Impact Statement</i> <i>Final EIS</i> <i>ROD</i>	10/1992 09/1994
<i>Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota</i> <i>Final EIS</i> <i>ROD</i>	05/1997 08/1997
<i>Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota, and South Dakota</i> <i>Final EIS</i> <i>ROD</i>	01/2001 06/2003
<i>Fire/Fuels Management Plan Environmental Assessment/Plan Amendment for Montana and the Dakotas (Statewide amendment)</i> <i>EA</i> <i>Decision Record</i>	07/2003 09/2003
<i>Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States</i>	06/2005
<i>Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States*</i> <i>Final EIS</i> <i>ROD</i>	06/2007 09/2007
<i>Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western United States</i> <i>Final EIS</i>	2008

*Final EIS and ROD disclosed and analyzed the effects of vegetation treatments, as well as provided decision guidance on standard operating procedures on use of such treatments, and established the research and demonstration plots for offices; however, the FEIS/ROD did not amend these RMPs.

3.2 MANAGEMENT DECISIONS

Management decisions for resources in the planning area are provided in the table below.

These decisions carry over into Chapter 4 which allows for comparison between the current decisions in this chapter and the analysis of management opportunities. A discussion of the status of each decision is also included.

RESOURCES

3.2.1 Air Resources and Climate Change

Applicable Regulations

Montana has been delegated authority by the Environmental Protection Agency (EPA) to implement many federal air quality programs under the Clean Air Act. With regard to federal air quality programs, the Montana Department of Environmental Quality (MDEQ) Air Quality Division (AQD) may implement programs at the minimum level required by EPA or may implement more stringent requirements to address specific state and local air quality concerns. The MDEQ implements a comprehensive air quality program, which sets additional Montana ambient air quality standards (MAAQS) and implements a minor source permitting program.

At a minimum, emission sources within the planning area must meet ambient air quality standards set forth in the MAAQS and national ambient air quality standards (NAAQS) provided in Table 2-2. Depending on the quantity of emissions, a source must obtain an air quality permit under MDEQ's major source or minor source permitting programs. Major source permitting programs applicable to the attainment areas within the planning area include the Prevention of Significant Deterioration (PSD) Program and the Title V Operating Permit Program. These programs apply to sources that have the potential to emit 100 to 250 tons per year (tpy) or more of a criteria air pollutant. Best available control technology (BACT) is required for sources subject to the PSD Program. With regard to the Title V Operating Permit Program, sources that have the potential to emit at least 10 tpy of an individual hazardous air pollutant (HAP) or 25 tpy of aggregate HAPs are also subject to permitting.

In addition, the MDEQ implements a minor source New Source Review (NSR) permitting program (e.g., minor source Montana Air Quality Permits [MAQPs] and registrations). The MDEQ's minor source NSR program requires sources with a potential to emit greater than 25 tons per year of any regulated air pollutant to apply for a permit to construct pursuant to the MAQP requirements or register with the Department of Environmental Quality (DEQ) pursuant to the registration requirements under the Administrative Rules of Montana (ARM). To ensure compliance with the NAAQS, DEQ's minor NSR program contains regulatory requirements that track activity and require the application of BACT. Additionally, state regulations require reasonable precautions to limit fugitive particulate emissions from all activities in Montana (i.e., permitted, registered, and those facilities that do not require a permit/registration).

The MDEQ issues open burn permits and, along with several counties, operates a Major and Minor Open Burning Smoke Management Program under the authority of MDEQ's Open Burning Regulations. In cooperation with the MDEQ, smoke management for prescribed fire activity is managed by the Montana/Idaho Airshed Group. The Montana/Idaho Airshed Group has established smoke management procedures for prescribed fire which are consistent with MDEQ Open Burning Regulations. Prescribed burns are completed in a manner that is consistent with procedures established by the Montana/Idaho

Airshed Group and the associated permit conditions of the Major Open Burning Permit and the rules addressing Minor Open Burning pursuant to the MDEQ Open Burning Regulations.

Emission sources are also subject to a variety of industry- and equipment-specific regulations that limit emissions, such as New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), motor vehicle emission standards, and motor vehicle fuel economy standards. In addition to limiting emissions of criteria air pollutants and HAPs, regulations also limit atmospheric greenhouse gas (GHG) emissions. For example, oil and gas NSPS standards that limit volatile organic compound (VOC) emissions also reduce methane emissions, which are also present in the regulated sources. CO₂ emissions are limited by federal fuel economy standards, which decrease GHG emissions by reducing fuel combustion on a miles traveled basis. Black carbon emission reductions occur as a co-benefit of emission standards that reduce diesel engine particulate emissions. Additional EPA and state regulation of GHGs and black carbon is expected to occur in the future as climate change mitigation programs become more robust.

Bureau of Land Management (BLM) Current Management Practices

The BLM current management practices include a requirement that all BLM-authorized activities comply with federal, state, and local air quality regulations and permits.

Decision Source	Current Management Decision/Policy	Status
<i>Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota</i> (August 1997)	The BLM will comply with the Rangeland Health Standard #4. This means that air quality on public lands helps meet the goals set out in the State of Montana Air Quality Implementation Plan. Efforts will be made to limit unnecessary emissions from existing and new point or nonpoint sources.	Implemented.
Section 176(c) Clean Air Act The BLM management actions or use authorizations will not contribute to air pollution that violates the quantitative or narrative Montana Air Quality Standards or contribute to deterioration of air quality in a selected class area.	Activities of all federal agencies must conform to the intent of the appropriate State Air Quality Implementation Plan and not: • Cause or contribute to any violations of ambient air quality standards • Increase the frequency of any existing violations • Impede the State's progress in meeting their air quality goals	Implemented.
	The BLM prescribed burning operations are conducted in accordance with a Montana Air Quality Open Burning Permit issued by the MDEQ with the support of the Montana/Idaho Airshed Group.	Implemented.

The BLM also provides best management practices (BMPs) to limit GHG emissions and other air pollutants, as explained in Chapter 6 of the Climate Change SIR (BLM, 2010). Additional management provisions affecting air resources include the following.

- Air quality analysis for oil and gas environmental impact statements (EISs) related to specific project authorizations and land use planning will conform to the Air Quality Oil and Gas Memorandum of Understanding (MOU) (BLM, 2011).
- As described in the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (Gold Book) (BLM, 2007), road maintenance includes dust abatement activities, and road design and construction limit vehicle speeds and resulting dust entrainment.
- In order to improve ambient air quality monitoring within the planning area, the BLM provided funding to the MDEQ to establish a new monitoring station in Lewistown. This monitor became operational in August 2012 and will provide much needed concentration data for central Montana.

3.2.2 Geology

Decision Source	Current Management Decision/Policy	Status
<i>Judith-Valley-Phillips (JVP) RMP – Geologic Features</i>	The BLM will provide for access and study of unique geological features. This includes examples of unique structure, stratigraphy, mineral assemblages, historical geology, geomorphology, or other geologic exposures that may be educationally valuable or scientifically significant. The BLM may develop interpretative sites for geologic features.	Not implemented.

3.2.3 Soil Resources

Decision Source	Current Management Decision/Policy
<i>Headwaters RMP</i>	Soils will be managed to maintain productivity and minimize erosion.
<i>JVP RMP</i>	The BLM will maintain and/or improve soil productivity by increasing vegetation cover and reducing erosion. Prior to authorizing any surface-disturbing activity (including, but not limited to, range improvements, mineral development or right-of-way [ROW] location), the BLM will evaluate the activity and, if necessary, apply mitigating measures, deny the authorization, or relocate the activity to a more suitable soil type. Site-specific measures will be developed for soils with high erosion susceptibility, steep slopes, sparse vegetation, and shallow soil depth. Activity plans will include mitigation to protect ground cover and streambank stability and to reduce sediment yields from surface-disturbing activities. All surface-disturbing activities are subject to an onsite evaluation to develop mitigation to reduce erosion and soil compaction, and improve soil

Decision Source	Current Management Decision/Policy
	stability and salinity control. These mitigation measures will also prescribe revegetation programs. 1. All proposed range improvements will be designed to limit erosion, saline seeps, salt accumulations (i.e., selenium), and rapid sedimentation. 2. Roads and trails, when part of an approved transportation plan, will be built or upgraded with due regard for environmental considerations. Cut-and-fill slopes should be no steeper than 3:1, where feasible. This will promote quick revegetation and soil stabilization, and discourage invasion by weeds. The type of terrain (flat to steep) will be a major factor in applying the 3:1 guideline. The intent is to provide a stable seedbed, where practical. After access roads are no longer needed, they will be contoured to a natural appearance and seeded. 3. Topsoil and suitable subsoil will be identified and stockpiled during all soil excavation activities and will be used to rehabilitate the area when the project is completed. Exceptions to this may be granted, based on a site-specific evaluation. Disturbed areas will be monitored for noxious plant infestation and control measures will be implemented, as needed.

3.2.4 Water Resources

3.2.4.1 Groundwater Resources

Similar to surface water, the state's groundwater has use classes that have different numeric and narrative criteria for meeting water quality standards. Under Montana water quality law, water quality must be maintained to sustain the use class of the groundwater. There are four classes of groundwater based upon the specific conductance of the water. Specific conductance is an indicator of the level of dissolved solids in the water. The classes are I, II, III, and IV, with Class I being the highest quality water, and Class IV being lowest quality water.

While MDEQ has the responsibility for water quality management in the State of Montana, the BLM is responsible for managing sources of pollutants on BLM-administered lands. The table below outlines the current Lewistown Field Office (LFO) groundwater management and policy decisions.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
Groundwater - 1	<i>Judith RMP</i> – Water Resource Management	Surface and groundwater quality will be maintained to meet or exceed state and federal water quality standards.	Implemented on all actions. Ongoing.
Groundwater - 2	<i>Judith RMP</i> – Water Resource Management	The BLM will continue obtaining water rights for all projects on BLM land and complying with Montana water laws.	Implemented on all actions. Ongoing.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
Groundwater - 3	<i>Judith RMP – Water Resource Management</i>	Small amounts of oil field-produced water, which do not meet water quality standards, will be disposed of in accordance with Onshore Order #7 and/or Environmental Protection Agency (EPA) guidelines.	No longer relevant - produced water will be disposed of in accordance with Onshore Order #7 and/or EPA guidelines, regardless of the produced water quality.
Groundwater - 4	<i>Judith RMP – Areas of Critical Environmental Concern (ACEC) – Collar Gulch ACEC</i>	Withdrawal of surface or groundwater will be restricted when the flow in Collar Gulch Creek drops below 3 cubic feet per second (cfs) measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4.	Implemented. No actions have occurred requiring this mitigation measure. Relevancy of this decision should be evaluated.
Groundwater - 5	<i>Headwaters RMP – Soil, Water, and Air Program</i>	Water quality will be maintained or improved in accordance with state and federal standards, including consultation with state agencies on proposed projects that may significantly affect water quality.	Implemented. Ongoing.
Groundwater - 6	<i>Standards for Rangeland Health and Guidelines for Livestock Grazing Management - Lewistown District</i>	Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #3: Water Quality meets Montana State standards.	Implemented. Ongoing.
Groundwater - 7	Onshore Oil and Gas Order #7, Disposal of Produced Water	All produced water from federal/Indian leases must be disposed of by: (1) injection into the substance; (2) into pits; or (3) other acceptable methods approved by the authorized officer, including surface discharge under NPDES permit.	Implemented. Ongoing.

3.2.4.2 Surface Water Resources

Management of water resources on BLM-administered lands follows the principles set forth in the Standards for Rangeland Health, which requires that BLM-administered lands be achieving or making significant progress towards the proper functioning condition of uplands and riparian-wetland areas as well as supporting water quality that meets Montana State standards. This is consistent with the federal

Clean Water Act (CWA) (33 USC §1251 et seq., 1972), the Montana Water Quality Act (75-5-301, 302 MCA), the Montana Nonpoint Source Management Plan (2007) developed by MDEQ, and the 2010 Nonpoint Source Water Quality Memorandum of Understanding between the BLM and the MDEQ.

While MDEQ has the responsibility for water quality management in the State of Montana, the BLM is responsible for managing sources of pollutants on BLM-administered lands. The table below outlines the current LFO surface water management and policy decisions.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
Surface water - 1	<i>Judith RMP</i> – Water Resource Management	Surface and groundwater quality will be maintained to meet or exceed state and federal water quality standards.	Implemented on all actions. Ongoing.
Surface water - 2	<i>Judith RMP</i> – Water Resource Management	The BLM will continue obtaining water rights for all projects on BLM land and complying with Montana water laws.	Implemented on all actions. Ongoing.
Surface water - 3	<i>Judith RMP</i> – Water Resource Management	The BLM will improve or maintain vegetative cover on upland and riparian-wetlands to reduce runoff and sedimentation, especially on highly-erodible soils.	No longer relevant - Standards for Rangeland Health have replaced the need for this decision.
Surface water - 3	<i>Judith RMP</i> – Water Resource Management	Reservoirs will be designed with a minimum 15-year life expectancy.	No longer relevant – the decision is more applicable to facilities management than the management of water resources.
Surface water - 4	<i>Judith RMP</i> – Water Resource Management	BMPs will be implemented to protect watershed values and maintain or improve water quality.	Implemented on all actions. Ongoing.
Surface water - 5	<i>Judith RMP</i> – Water Resource Management	Small amounts of oil field-produced water which do not meet water quality standards will be disposed of in accordance with Onshore Order #7 and/or EPA guidelines.	No longer relevant - produced water will be disposed of in accordance with Onshore Order #7 and/or EPA guidelines, regardless of the produced water quality.
Surface water - 6	<i>Judith RMP</i> – Forest Management	Streamside green strips will be left along perennial streams. Skidding through streams will not be allowed.	No longer relevant - Montana Streamside Management Zone laws have replaced the need for this decision. Consider adopting the

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
			riparian management zone criteria and management direction for consistency with the <i>Butte</i> and <i>Missoula Field Office RMPs</i> .
Surface water - 7	<i>Judith RMP</i> – Forest Management	Clearcut blocks will be less than 10 acres and shaped to resemble natural openings.	No longer relevant - clearcut size is not a particularly useful indicator of effects to watershed conditions.
Surface water - 8	<i>Judith RMP</i> – Areas of Critical Environmental Concern (ACEC) – Collar Gulch ACEC	The BLM will initiate a study to identify the source of water quality degradation in the drainage (Collar Gulch) and develop appropriate measures to eliminate or mitigate the degrading source.	Implemented. Ongoing.
Surface water - 9	<i>Judith RMP</i> – Areas of Critical Environmental Concern (ACEC) – Collar Gulch ACEC	The BLM will implement a nondegradation policy for the waters in Collar Gulch Creek to protect the resident population of westslope cutthroat trout.	No longer relevant - all waters in the State of Montana have a nondegradation policy intended to maintain water quality parameters necessary to support existing uses.
Surface water - 10	<i>Judith RMP</i> – Areas of Critical Environmental Concern (ACEC) – Collar Gulch ACEC	The BLM will initiate a routine water quality monitoring program in the drainage (Collar Gulch) to establish baseline conditions.	Implemented. Ongoing.
Surface water - 11	<i>Judith RMP</i> – Areas of Critical Environmental Concern (ACEC) – Collar Gulch ACEC	Withdrawal of surface or groundwater will be restricted when the flow in Collar Gulch Creek drops below 3 cfs measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4.	Implemented. No actions have occurred requiring this mitigation measure. Relevancy of this decision should be evaluated.
Surface water - 12	<i>Judith RMP</i> – Areas of	Concurrent reclamation will be emphasized thereby reducing erosion	Implemented. No actions have occurred

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
	Critical Environmental Concern (ACEC) – Collar Gulch ACEC	and sedimentation potential.	requiring this mitigation measure.
Surface water - 13	<i>Headwaters RMP – Soil, Water, and Air Program</i>	Soil, water, and air resources will continue to be evaluated on a case-by-case basis as part of project level planning. Such an evaluation will consider the significance of the proposed project and the sensitivity of soil, water, and air resources in the affected area.	Implemented. Ongoing.
Surface water – 14	<i>Headwaters RMP – Soil, Water, and Air Program</i>	Water quality will be maintained or improved in accordance with state and federal standards, including consultation with state agencies on proposed projects that may significantly affect water quality.	Implemented. Ongoing.
Surface water – 15	<i>Headwaters RMP – Soil, Water, and Air Program</i>	Management actions on public land within municipal watersheds will be designed to protect water quality and quantity.	Implemented. Ongoing.
Surface water – 16	<i>Headwaters RMP – Soil, Water, and Air Program</i>	Management activities in riparian zones will be designed to maintain or improve riparian habitat condition.	Implemented. Ongoing.
Surface water - 17	<i>Headwaters RMP – Soil, Water, and Air Program</i>	Roads and utility corridors will avoid riparian zones to the extent practicable.	Implemented. Ongoing.
Surface water - 18	<i>Standards for Rangeland Health and Guidelines for Livestock Grazing Management - Lewistown District</i>	Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #2: Riparian and wetland areas are in proper functioning condition.	Implemented. Ongoing.
Surface water - 19	<i>Standards for Rangeland Health and Guidelines for Livestock</i>	Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #3: Water	Implemented. Ongoing.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
	<i>Grazing Management - Lewistown District</i>	quality meets Montana State standards.	
Surface water - 20	Fergus and Petroleum County Management Framework Plans	Oil and gas lease stipulations. Any surface use or occupancy will be strictly controlled or, if absolutely necessary, excluded from special areas. Special areas may include: 500 feet or, when necessary, within the 25-year floodplain from reservoirs, lakes, and ponds and intermittent, ephemeral, or small perennial streams; 1,000 feet or, when necessary, within the 100-year floodplain from larger perennial streams, rivers, and domestic water supplies.	Implemented. Ongoing. Stipulations should be evaluated for effectiveness, and new scientific information should be considered for buffer distances.
Surface water - 21	Executive Order 11988: Floodplain Management	Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation, and licensing activities.	Implemented. Ongoing.
Surface water - 22	Executive Order 11990: Protection of Wetlands	Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial	Implemented. Ongoing.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
		values of wetlands in carrying out the agency's responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation, and licensing activities.	
Surface water - 23	Onshore Oil and Gas Order # 7, Disposal of Produced Water	All produced water from federal/Indian leases must be disposed of by injection into the substance; into pits; or other acceptable methods approved by the authorized officer, including surface discharge under NPDES permit.	Implemented. Ongoing.

3.2.5 Vegetative Communities

3.2.5.1 Rangelands

Decision Source	Current Management Decision/Policy
<i>Judith RMP</i> <i>Headwaters RMP</i>	The previous two RMPs did not specifically identify outcome-based management objectives for upland vegetation (forests, rangelands, and woodlands); however, the RMPs did list the following objectives that would enhance or restore vegetation through livestock management activities: Judith Resource Area: • Provide approximately 133,233 animal unit months (AUMs) of livestock forage, equal to approximately 40 percent of total forage available on BLM lands, to 455 operators. • Develop 41 new allotment management plans (AMPs). Headwaters Resource Area: • Provide approximately 31,501 AUMs of livestock forage, equal to

Decision Source	Current Management Decision/Policy
	approximately 40 percent of total forage available on BLM lands, to 292 operators.
	The previous two RMP/EISs identified three levels of range management. Monitoring has been specifically tied to these three levels. Objectives and monitoring by management level are detailed below. Management Level I (Improve the forage production and condition in grazing allotments that are in unsatisfactory condition. Improve this condition to meet Level I standards): • Collect actual use, utilization, and climatic data. • Collect trend data as grazing plans are developed. Post-baseline trend monitoring would continue as funding, personnel, and time allow. • Conduct compliance monitoring on all I allotments with implemented AMPs or grazing activity plans. Management Level M (Maintain or improve forage production in grazing allotments that are currently in satisfactory condition.): • Collect actual use, utilization, trend, and climatic data. Trend is collected on allotments as grazing plans or objectives are developed. Baseline and post-baseline trend is performed when allowed by current priorities, funding, or lack of personnel/time constraints. • Compliance checks are performed to ensure adherence to grazing authorization. Management Level C (Maintain the existing allotment situation and provide for management opportunities as needs arise for operators and other land use agencies): • Perform periodic compliance checks to ensure that annual grazing authorizations are adhered to, as necessary, but only when there is no time, funding, or personnel constraints or when management priorities allow. These compliance checks are currently and primarily being performed annually and only for M and I category allotments, due to Management Information System (MIS) obligations and management priorities or needs.

Decision Source	Current Management Decision/Policy
<i>Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota</i>	The following guidelines were developed in conjunction with the Standards for Public Land Health, and are fully applicable in any combination: Guidelines for grazing management are preferred or advisable approaches to grazing management practices determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard(s). Guidelines are provided to maintain or improve resource conditions in upland and riparian habitats available to livestock grazing. In both riparian and upland habitats, these guidelines focus on establishing proper functioning conditions. The application of these guidelines is dependent on individual management objectives. Desired future conditions in plant communities and streambank characteristics will be determined on a case-by-case basis. GUIDELINE #1: Grazing will be managed in a manner that will maintain the proper balance between soils, water, and vegetation over time. This balance varies with location and management objectives, historic use, and natural fluctuations, but acceptable levels of use can be developed that are compatible with resource objectives. GUIDELINE #2: Manage grazing to maintain watershed vegetation, species richness, and floodplain function. Maintain riparian vegetative cover and structure to trap and hold sediments during runoff events to build streambanks, recharge aquifers, and dissipate flood energy. Grazing management should promote deep-rooted, herbaceous vegetation to enhance streambank stability. Where nonnative species are contributing to proper functioning conditions, they are acceptable. Where potential for palatable woody shrub species (willows, dogwood, etc.) exists, promote their growth and expansion within riparian zones. GUIDELINE #3: Pastures and allotments will be identified based on their sensitivity and suitability for livestock grazing. Where determinations have not been previously documented, suitability for grazing will be determined by: topography, slope, distance from water, vegetation habitat types, and soil types must be considered when determining grazing suitability. Unsuitable areas should be excluded from grazing. GUIDELINE #4: Management strategies for livestock grazing will ensure that long-term resource capabilities can be sustained. End of season stubble heights, streambank moisture content, and utilization of herbaceous and woody vegetation are crucial factors which must be evaluated in any grazing strategy. These considerations are essential to achieving long-term vegetation or stream channel objectives and

Decision Source	Current Management Decision/Policy
	should be identified on a site-specific basis and used as terms and conditions. GUIDELINE #5: Grazing will be managed to promote desired plants and plant communities of various age classes, based on the rate and physiological conditions of plant growth. Management approaches will be identified on a site-specific basis and implemented through terms and conditions. Caution should be used to avoid early spring grazing use when soils and streambanks are wet and susceptible to compaction and physical damage that occurs with animal trampling. Likewise, late summer and fall treatments in woody shrub communities should be monitored closely to avoid excessive utilization. GUIDELINE #6: The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions and processes of those sites. GUIDELINE #7: Locate facilities (e.g., corrals, water developments) away from riparian-wetland areas. GUIDELINE #8: When provided, supplemental salt and mineral should not be placed adjacent to watering locations or in riparian-wetland areas so not to adversely impact streambank stability, riparian vegetation, water quality, or other sensitive areas (e.g., key wildlife wintering areas). Salt and minerals should be placed in upland sites to draw livestock away from watering areas or other sensitive areas and to contribute to more uniform grazing distribution. GUIDELINE #9: Noxious weed control is essential and should include: cooperative agreements, public education, and integrated pest management (mechanical, biological, and chemical). GUIDELINE #10: Livestock management should utilize practices such as those referenced by the Natural Resources Conservation Service (NRCS)-published prescribed grazing technical guide to maintain, restore, or enhance water quality. GUIDELINE #11: Grazing management should maintain or improve habitat for federally-listed threatened, endangered, and sensitive plants and animals. GUIDELINE #12: Grazing management should maintain or promote the physical and biological conditions to sustain native populations and communities. GUIDELINE #13: Grazing management should give priority to native species. Nonnative plant species should only be used in those

Decision Source	Current Management Decision/Policy
	situations where native seed is not readily available in sufficient quantities, where native plant species cannot maintain or achieve the standards, or where nonnative plant species provide an alternative for the management and protection of native rangelands. GUIDELINE #14: Allotment monitoring determines how ongoing management practices are affecting the rangelands. To do so, the evaluations should be based on: measureable management objectives; permanent and/or repeatable monitoring locations; and short-term and long-term data.

Vegetation objectives were typically established in allotment-specific AMPs and outcomes were in the form of increasing (or reducing) key species cover and composition. Monitoring data was quantitative and the resulting trend assessment was used to evaluate the management actions that were implemented in the plan.

With the advent of the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (S&Gs), the BLM developed a more qualitative assessment protocol. "Interpreting Indicators of Rangeland Health" (TR 1734-1 Ver. 1) was developed in fiscal year (FY) 1998 and fully implemented in FY 2005 (TR-1734-6 Ver. 4).

Management Actions

With the exception of sagebrush control (burning), most structural improvements were implemented as planned. By the mid-1990s, most AMP revision and development had declined, as funding and manpower declined in the agency. Modification of the grazing permit/lease mandatory terms and conditions became the most efficient management tool. Additional allotment-specific terms and conditions could be added to the grazing permit/lease where needed.

Current Management, Monitoring, Marketing, Interpretation, and Partnerships

Management of vegetation communities includes managing livestock grazing by implementing rest-rotation and deferred-rotation grazing systems. These grazing systems are implemented where range condition improvements are needed and are used as appropriate actions to meet the S&Gs. The grazing systems are designed to rest livestock grazing pastures at least once every 3 to 4 years. Grazing systems are also designed to change the time of grazing from year to year so the vegetation is not grazed during the same growth stage every year. Changing the season-of-use and implementing rest for the vegetation has proven to be advantageous for the vegetation and allows the vegetation to be vigorous and healthy and should result in an improvement in the range condition. Healthy vegetation is more capable of withstanding stress, such as drought, than vegetation that is in poor condition.

Range improvement projects are designed and installed to improve the condition of the vegetation through water projects to improve the distribution of the livestock and fencing to regulate timing and duration of use. Range improvements, although designed for improving livestock grazing or wildlife habitat, have the additional benefits of helping other species in the area.

The management objectives for the vegetation within the planning area are to improve the overall condition of the vegetation through improved grazing management, implement vegetation treatments

for improving Greater Sage-grouse habitat, and increase the forage base for livestock and wildlife. Special attention would be paid to those management techniques that would increase critical winter habitat for big game, would enhance the number and quality of special status plant species, and would provide the proper conditions so the populations of special status plant species in the planning area can increase in number and quality. One objective of vegetation management is to achieve a mix of vegetation types and a variety of age classes. An increase in the variety of vegetation types and age classes enhances the vegetation's ability to withstand disturbances. More specific wildlife habitat criteria would be met, increasing the variety and health of wildlife found within the planning area.

The LFO has not completed land health assessments on all allotments to evaluate all of the Rangeland Health Standards. Land health assessments are done on an allotment-by-allotment basis and, as a result, occur on all allotments scheduled for grazing permit renewal each year. Appendix C lists allotments that have current land health assessments (monitoring) and the resulting Standards conformance review determinations.

3.2.5.2 Forest/Woodlands

The forest and woodland programs addressed in the 1984 *Headwaters RMP* and the 1994 JVP RMP were generally plans by which forest products were made available on a sustained-yield basis or the Allowable Sale Quantity (ASQ). Management decisions did not take other resources into account, nor were forest health issues considered. Current direction of the BLM's forest and woodland program is to implement forest management planning concepts to meet the goals and objectives of multiple resources. As such, project-level planning and decisions have currently been designed and implemented in order to address overall forest ecosystem health as well as to increase biodiversity.

In addition to recent project-level planning, the following planning documents address aspects of forest and woodland vegetation management across the planning area:

Decision Source	Current Management Decision/Policy	Status
<i>Fire/Fuels Management Plan Environmental Assessment/Plan Amendment for Montana and the Dakotas</i> (BLM, 2003a)	The direction from the Fire/Fuels Management Environmental Assessment (EA) Plan Amendment (September 2003) that would apply to forest and woodland management within the planning area includes goals related to fire and fuels management and other vegetation.	Implemented.
<i>Forest Health and Vegetation Management for the Judith and Moccasin Mountains Final EA</i> (BLM and Montana Department of Natural Resources and Conservation (DNRC), 2006)	The overall goal for forest health treatment areas of the Judith and Moccasin Mountains is to develop a mosaic of stands with varying ages and densities, to increase overall vegetative diversity, to modify fire behavior, and to limit the expected size of escaped wildfires. Forest health issues of insects and disease, stand density and structure, fuel loading, and stage of succession will be addressed by treatments in forested areas. The intent is to retain	Implemented.

Decision Source	Current Management Decision/Policy	Status
	large trees of fire-resistant species and reduce stand densities across much of the landscape.	

In addition to guidance found in the above documents, various aspects of the public domain forestry program are based upon the following federal and state laws and policy:

Federal Laws

- Material Disposal Act of 1947 - Public Law 80-291
- National Environmental Policy Act of 1969 (NEPA) - 42 US Code [USC] 4321-47
83 Stat. 852
Public Law 91-190
- Federal Land Policy and Management Act of 1976 (FLPMA) - 43 USC 1701 et seq.
90 Stat. 2743
Public Law 94-579
- Water Quality Act of 1987
- Clean Air Act
- (See BLM Manual 5001.03 for additional authority citations)

Federal Regulations

- 43 CFR 5000 to 43 CFR 5511

Federal Policy

- Public Domain Forest Management Policy of 1989
- Total Forest Management Initiative of June 1992

State Laws

- Montana Department of Natural Resources and Conservation (DNRC), Montana Department of Fish, Wildlife and Parks (MFWP), and State Historic Preservation Office (SHPO). The *Montana State Forest Land Management Plan* states that Montana's goal for the management of its forested lands is to produce income to trust beneficiaries now and in the future. Forest health issues do not recognize administrative boundaries and adverse forest health conditions on BLM lands may affect state lands in their vicinity.

Additional direction for current management is located in Chapters 5 and 6 of this document.

3.2.5.3 Riparian-Wetland Communities

This section characterizes the current management of riparian-wetland plant communities. Management of riparian-wetland areas on BLM-administered lands follows the principles set forth in the Standards for Rangeland Health which requires that BLM-administered lands be achieving or making significant progress towards the proper functioning condition (PFC) of uplands and riparian-wetland areas, as well as supporting water quality that meets Montana State standards. The table below outlines the current LFO riparian-wetland management and policy decisions.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
Riparian-wetland - 1	Executive Order 11990: Protection of Wetlands	Each agency shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation, and licensing activities.	Implemented. Ongoing.
Riparian-wetland - 2	Executive Order 11988: Floodplain Management	Each agency shall provide leadership and shall take action to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land	Implemented. Ongoing.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
		resources planning, regulation, and licensing activities.	
Riparian-wetland - 3	<i>Standards for Rangeland Health and Guidelines for Livestock Grazing Management - Lewistown District</i>	Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #2: Riparian and wetland areas are in proper functioning condition.	Implemented. Ongoing.
Riparian-wetland - 4	Fergus and Petroleum County Management Framework Plans	Oil and gas lease stipulations. Any surface use or occupancy will be strictly controlled or, if absolutely necessary, excluded from special areas. Special areas may include: 500 feet or, when necessary, within the 25-year floodplain from reservoirs, lakes, and ponds and intermittent, ephemeral, or small perennial streams; 1,000 feet or, when necessary, within the 100-year floodplain from larger perennial streams, rivers, and domestic water supplies.	Implemented. Ongoing. Stipulations should be evaluated for effectiveness, and new scientific information should be considered for buffer distances. Consistency with neighboring RMPs should be considered.
Riparian-wetland - 5	<i>Judith RMP – Water Resource Management</i>	The BLM will improve or maintain vegetative cover on upland and riparian-wetlands to reduce runoff and sedimentation, especially on highly erodible soils.	No longer relevant - Standards for Rangeland Health have replaced the need for this decision.
Riparian-wetland – 6	<i>Judith RMP – Riparian and Wetland Management of Watersheds</i>	The BLM will maintain and/or improve the riparian-wetland areas in existing, proposed, and potential AMPs along with wetlands in non-AMP areas based on PFC and desired plant community.	Implemented. Ongoing. Should be updated to include the integrated riparian management process.
Riparian-wetland – 7	<i>Judith RMP – Riparian and Wetland Management of Watersheds</i>	The first objective will be to improve or maintain riparian-wetland areas to proper functioning condition. The second objective will be to achieve or maintain the desired plant community to provide wildlife habitat, increase waterfowl habitat by 30 percent, improve	Implemented. Ongoing. The portion of the decision to increase waterfowl habitat by 30 percent is no longer relevant. This decision does not consider whether increasing waterfowl habitat by 30 percent is feasible. Should

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
		watershed conditions, and to comply with the nonpoint source water pollution section of the Clean Water Act.	be updated to include the integrated riparian management process.
Riparian-wetland – 8	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	The BLM will initially accomplish riparian-wetland objectives through livestock grazing methods at current stocking levels. If grazing methods are not successful in meeting management objectives, the BLM will take the necessary action to achieve those objectives. This could include, but is not limited to, fencing riparian-wetland areas, reducing livestock numbers and use, and rehabilitating degraded riparian-wetland areas.	Implemented. Ongoing.
Riparian-wetland – 9	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	To accomplish the riparian-wetland objectives, the BLM will consider the importance of the intermingled private lands, including valuable riparian-wetland areas, which could be adversely impacted as a result of management changes on BLM land.	Implemented. Ongoing.
Riparian-wetland – 10	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	After riparian-wetland objectives are met, the BLM will allocate any forage increases within riparian-wetland areas to watershed, wildlife, and livestock.	Relevancy of this decision should be evaluated.
Riparian-wetland - 11	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	As new AMPs are written, existing are AMPs revised, or through monitoring, specific objectives consistent with the plant community types described by the Montana Riparian Association will be developed. The objectives will include two aspects; PFC and desired plant community.	Implemented. Ongoing. Should be updated to include the integrated riparian management process.
Riparian-wetland - 12	<i>Judith RMP</i> – Riparian and Wetland Management	The proper functioning condition objective will include the following statement: “Sufficient plant residue would be left in the	No longer relevant – the statement is not an objective.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
	of Watersheds	primary floodplain to protect streambanks during runoff events and provide for adequate sediment filtering, and dissipation of flood water energy.” Grazing methods will be designed to protect streambanks from unacceptable shearing and trampling.	
Riparian-wetland - 13	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	To achieve the PFC objective, more specific utilization standards may be incorporated into AMPs. Utilization standards will be based on key species to ensure grazing use is consistent with other resource values and objectives including water quality, recreation, and wildlife.	No longer relevant – use levels are triggers for livestock movement, and they should not be used as standards for condition of resources. Should be updated to include the integrated riparian management process.
Riparian-wetland - 14	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	Grazing methods to be implemented include, but are not limited to: • Hot season grazing deferment; • Creation of separate riparian pastures; • Changes in kind and class of livestock; • Time control grazing; and • Other range management practices such as development of offsite water, salting, developing shade sources, herding, insect control, or early use pastures. • All spring developments will be fenced, if needed, to protect associated riparian-wetland vegetation. • Salt and mineral blocks and supplemental feeding will only be allowed at least ¼ mile or further from riparian-wetland areas, where possible. • Water developments will be built away from stream riparian-wetland areas where	Implemented. Ongoing.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
		possible. Study exclosures will be put in place on key areas and areas representative of common riparian-wetland types and types about which there are questions to compare management progress, demonstrate the values of proper management, and confirm potential and recovery rates. This will be a cooperative effort with permittees or lessees.	
Riparian-wetland – 15	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	Seeding, planting, and installing rock gabions and/or check dams may be used to meet riparian objectives in addition to grazing methods.	Implemented. Ongoing. Appropriateness of using rock gabions and/or check dams to meet riparian objectives should be evaluated.
Riparian-wetland – 16	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	The BLM will implement livestock grazing formulas to maintain or improve waterfowl nesting cover on allotments with existing or potential waterfowl production areas.	No longer relevant. Decision is related to waterfowl production rather than the management of riparian-wetland areas.
Riparian-wetland – 17	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	To improve waterfowl production, the BLM will construct six to eight satellite water bodies of 2 to 3 surface acres within 1.5 miles of existing perennial water bodies greater than 10 surface acres. The BLM will also construct perennial water bodies (40 percent of which must be at least 3 feet deep) within 1.5 miles of an existing cluster (four to five) of satellite water bodies.	No longer relevant. Decision is related to waterfowl production rather than the management of riparian-wetland areas. The decision is also an environmentally irresponsible use of water.
Riparian-wetland - 18	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	The BLM may fence specific existing and new waterfowl and fishing reservoirs to establish or protect shoreline vegetation for a perimeter of a minimum of 100 feet around the high waterline. Periodic, short-term grazing of fenced enclosure may be allowed,	Has been implemented on some actions, but not on others. This decision should also be considered in sport fishery management as well.

Planning Decision Number	Decision Source	Current Management Decision/Policy	Status
		if necessary, to maintain or improve wetland habitat.	
Riparian-wetland – 19	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	The BLM will comply with all requirements for any insecticide or herbicide use within the wetlands complex (aquatic and terrestrial habitat).	Implemented. Ongoing.
Riparian-wetland – 20	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	Land treatments and prescribed fire will not be allowed, except as required for wildlife habitat management objectives.	Implemented. Ongoing.
Riparian-wetland – 21	<i>Judith RMP</i> – Riparian and Wetland Management of Watersheds	Mechanical land treatments may be implemented on soil subgroups 1, 2, 10, and 11 containing predominantly blue grama and clubmoss vegetation to improve waterfowl nesting cover.	No longer relevant. Decision is related to waterfowl production rather than the management of riparian-wetland areas.
Riparian-wetland – 22	<i>Headwaters RMP</i> – Soil, Water, and Air Program	Management activities in riparian zones will be designed to maintain or improve riparian habitat condition.	Implemented. Ongoing.
Riparian-wetland - 23	<i>Headwaters RMP</i> – Soil, Water, and Air Program	Roads and utility corridors will avoid riparian zones to the extent practicable.	Implemented. Ongoing.
Riparian-wetland – 24	<i>Headwaters RMP</i> – Wildlife and Fisheries Program	Management actions within floodplains and wetlands will include measures to preserve, protect, and, if necessary, restore their natural functions (as required by Executive Orders 11988 and 11990).	Implemented. Ongoing.
Riparian-wetland – 25	<i>Headwaters RMP</i> – Wildlife and Fisheries Program	Management techniques will be used to minimize the degradation of streambanks and the loss of riparian vegetation.	No longer relevant - Standards for Rangeland Health have replaced the need for this decision.
Riparian-wetland – 26	<i>Headwaters RMP</i> – Wildlife and Fisheries Program	Riparian habitat needs will be taken into consideration in developing livestock grazing systems and pasture designs.	Implemented. Ongoing.

3.2.5.4 Special Status Species (Plants)

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i> <i>Judith RMP</i>	There are no decisions in place regarding special status species plants from existing RMPs.	

3.2.5.5 Invasive Plant Species

Current Management Practices for Noxious and Invasive Plants

Decisions affecting the management of invasive species in the LFO RMP planning area come from the following documents:

- *Judith Resource Area RMP*, 1994
- *Headwaters Resource Area RMP*, 1983
- *Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States* (September 2007)
- County Noxious Weed Control Agreement Lewistown Field Office, 2013
- *Implementation of Requirements for Noxious Weed Seed Free Forage on Public Lands in Montana – EA MT 01 EA97* (BLM, 1997b)

The scattered public land pattern requires the BLM to work together with other landowners and local governments to manage invasive plants. On public lands in the planning area, management is coordinated with affected permittees/lessees and at the county level with individual county weed boards and other involved parties such as state/other federal agencies, private landowners, and private interest groups.

Management and prevention activities are very diverse based on the different species that occur and the individuals involved in each management area. Strategies are developed using the principles of Integrated Weed Management (IWM); IWM is defined as, “The application of many kinds of technologies in a mutually supportive manner. It involves the deliberate selection, integration, and implementation of effective weed control measures with due consideration to economic, ecological, and sociological consequences.” The principles of control through IWM include:

- Prevention
- Cultural
- Chemical
- Biological
- Mechanical

A variety of state and federal laws and regulations are designed to control the spread of noxious weeds that impact plant communities on federal lands. The threat is widespread throughout the western United States (US) leading to the development of a national strategy and weed management plan to control invasive weeds (BLM, 2004).

Cooperative range improvement agreements between the BLM and affected permittees/lessees are established for control of existing or new infestations of noxious weeds found within the allotments

during the term of the grazing permit/lease in accordance with the respective EA detailing the terms and conditions for the grazing permit/lease.

The BLM cooperates with county weed boards in the planning area for control efforts directed toward noxious weeds on public lands. This cooperation consists of providing BLM funding, exchanging information, and control efforts by BLM crews intended to expand county efforts. However, cooperation by the BLM is limited and is based on federal weed control funding and availability of staffing and equipment.

3.2.6 Fish and Wildlife

3.2.6.1 Fish and Aquatic Communities

1984 RMP and Amendments

The *Headwaters Resource Area RMP* (BLM, 1984a) and associated Record of Decision (ROD) provide few details on the management of fish resources. However, management direction that applies to fisheries resources includes:

- Fish and wildlife habitat will be evaluated on a case-by-case basis as part of project-level planning and the concepts of “Essential” and “Critical” habitat will be used as part of the sensitivity evaluation.
- Activities will not be permitted in habitat for threatened and endangered species that would jeopardize the continued existence of such species.
- Whenever possible, management activities in habitat for threatened and endangered species will be designed to benefit those species through habitat improvement.
- Fish stocking proposals will be evaluated and recommendations will be made to the MFWP.
- Bridges and culverts will be designed and installed to maintain adequate fish passage.

Additional direction is provided for the protection of fish habitat and aquatic resources. This direction includes:

- Mandated management prescriptions mandated by laws, regulations, MOUs, and BLM instruction. Water resources will be evaluated on a case-by-case basis as part of project-level planning. This evaluation will consider the significance of the proposed action and the sensitivity of water resources and stipulations will be attached, as appropriate, to ensure compatibility of projects with water resource management.
- Water resources will be maintained or improved in accordance with state and federal standards.
- Management actions on BLM land within municipal watersheds will be designed to protect water quality and quantity.
- The BLM will try to prevent, rather than mitigate, degradation of water quality.
- Management activities in riparian zones will be designed to maintain or improve riparian habitat condition.
- Roads and utility corridors will avoid riparian zones to the extent practicable.
- Best management practices (BMPs) that protect water and riparian resources will be implemented.

1994 JVP RMP

The 1994 *JVP RMP* and ROD also do not provide many details about fisheries management. However, these management actions are given for fisheries reservoirs:

- As reservoirs are planned for grazing management, fisheries potential will be a key consideration in location and design.
- New fisheries reservoirs will normally be fenced and a watering tank provided below the reservoir.
- Existing fisheries reservoirs will be fenced to exclude livestock, if necessary, to improve emergent vegetation, shade, and/or improve the recreational experience. Periodic, short-term grazing of fenced enclosures may be allowed, if necessary, to maintain or improve wetland habitat.
- New fisheries reservoirs may be identified with priority consideration given to reservoirs near population centers and major access routes.
- The BLM will attempt to develop self-sustaining game fish populations while recognizing that some reservoirs would be maintained as put-and-take fisheries.
- The BLM will improve existing habitat by modifying existing high potential reservoirs, considering fisheries potential during the design phase of new reservoirs, and attempting to locate reservoirs in a cluster with a variety of self-sustaining game fish.

The approved *Judith RMP* also identifies a 10-year Cooperative Fish Management Plan between the BLM and MFWP that was signed in 1990. In this plan, the MFWP would stock 16 reservoirs. These reservoirs are listed in Table 3-1.

Table 3-2
Reservoirs Identified for Fisheries on BLM Land

BLM Reservoirs Identified for Fisheries			
Buffalo Wallow	Fritzner	South Fork Dry Blood	Crooked Creek
Dry Fork	Jakes	Payola	Yellow Water
Dry Blood	Hopalong	Mauland	Cotton Dam
Drag	Lower Dry Fork	Holland Upper	Box Elder

After research, it was determined that some of these reservoirs now go by other names. Dry Fork Reservoir is now known as Dry Wolf, Lower Dry Fork is Wolf Coulee #2, and Holland Upper is known simply as Holland. In addition, Box Elder has two names, both the given one and Vogel Reservoir.

Since this RMP was signed, there have been considerable changes in reservoir management. The current status of the reservoirs listed above, as well as additional reservoirs, and their status are outlined in Table 3-3.

Table 3-3
Condition and Status of Stocked Reservoirs on BLM

Reservoir	Status
Buffalo Wallow	Windmill installed in 2010; dam compromised in 2011 floods; pending decision to breach dam
Hopalong	Compromised dam; no longer maintains sufficient water depth to overwinter fish
Holland (Holland Upper)	Active fishery; windmill installed in 2010 to aerate water and reduce overwinter fish mortality; dam in deteriorating condition, construction date unknown
Dry Wolf (Dry Fork)	Compromised dam no longer maintains sufficient water depth to overwinter fish

Reservoir	Status
Wolf Coulee #2 (Lower Dry Fork)	High alkalinity endangered livestock; breached in 2012
Crooked Creek	Compromised dam no longer maintains sufficient water depth to overwinter fish
Dry Blood	Active fishery; dam reconstructed in 2009 due to safety concerns and classification as high-hazard facility by Bureau of Reclamation (BOR) in their 2001 Downstream Hazard Classification Report; excellent condition
South Fork Dry Blood	Active fishery; windmill installed in 2009
Yellow Water	Active fishery and waterfowl habitat managed by MFWP and FWS; dam/reservoir in excellent condition
Drag	Active fishery; detention dam built in 1964 is in good condition; drop dam built in 1964, overflow pipe through drop dam scheduled for replacement fall 2013
Payola	Active fishery; dam built in 1970 and repaired with added fill and riprap in 1974; windmill installed in 2008 and repaired in 2009, currently not operational
Cotton Dam	No longer accessible to stock fish
Fritzner	High alkalinity became toxic to fish; no longer stocked
Mauland	High alkalinity became toxic to fish; no longer stocked
Box Elder (Vogel)	Active fishery; dam constructed in 1972 and in good condition
Jakes	Active fishery; dam constructed in 1950 and in deteriorating condition
Whisker	Active fishery; windmill installed in 2009 but removed in 2010 due to damage from high winds; dam constructed around 1939 and in deteriorating condition
Bubs	Active fishery; dam constructed in 1943 and in deteriorating condition
Wolf Coulee #1	Active fishery; dam built in 1946 and in fair condition

3.2.6.2 Aquatic Nuisance Species

No Decisions are currently in place for aquatic nuisance species.

3.2.6.3 Wildlife and Habitat

Current Management—Fish and Wildlife

The LFO is responsible for the management of a wide variety of wildlife habitats across northern Montana. The BLM manages wildlife habitat and the MFWP manages wildlife populations. These habitats reflect the influence of a variety of past and ongoing human activities and disturbances resulting in significant increases in some species populations, declines in others, and modification of large blocks of habitat. These habitats and the wildlife species that rely on them rarely exist solely on BLM lands, and often extend across administrative boundaries to other federal, state, and private lands.

Relevant Plans and Amendments, Regulations, and Guidance Documents

- Fish and Wildlife Coordination Act of 1958
- *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota EIS* (1997)

- Executive Order 11987, Exotic Organisms
- BLM Manual 6500, *Wildlife, Fish, and Plant Resources*
- Migratory Bird Conservation Act of 1929
- Executive Order 13186, Migratory Birds
- BLM Manual 98-140, Revised Guidelines for Management of Domestic Sheep and Goats in Native Wild Sheep Habitat
- Fish and Wildlife 2000, National and State Policies

The wildlife objective of the *JVP RMP* is to ensure optimum populations and a natural abundance and diversity of wildlife resources on public lands by maintaining, enhancing, and restoring habitat conditions. The wildlife objective of the *Headwaters RMP* is to maintain and enhance habitat for all species of wildlife with emphasis for habitat maintenance and development placed on present and potential habitat for sensitive, threatened and/or endangered species, nesting waterfowl, fisheries, and crucial big game winter ranges.

1994 JVP RMP and Amendments

Sharp-tailed Grouse: Woody vegetation will be improved or maintained and careful consideration given to the location of all water improvements within 1½ miles of sharp-tailed grouse leks.

Raptors: Powerline construction follows recommendations in *Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 1981* (Olendorff, et al., 1981). Various techniques are needed to plant new trees and/or nesting structures to secure adequate nesting areas for the Swainson's hawk. These nesting structures need to be protected from livestock by fencing or placing large rocks around the nesting structure. Potential peregrine falcon nesting cliffs are scattered throughout the Missouri River Breaks and mountain ranges in the RMP area. These areas should be considered future reintroduction sites. The BLM may provide artificial nesting platforms for osprey, golden eagles, and other raptors. The BLM may develop nesting areas in high cliff faces for peregrine falcons.

Waterfowl: The BLM will emphasize the mallard, northern pintail, redhead, and canvasback during habitat development. Potholes, in association with the existing stock water reservoirs, provide additional waterfowl production. Potholes would be developed into complexes with large permanent water bodies, brood ponds, and pair ponds.

Great Blue Heron and Double-Crested Cormorant: Rookeries identified on BLM-administered lands are protected. Surface disturbance is not allowed within 1,000 feet of rookeries.

Predators: Animal damage control is permitted in the RMP area, subject to the stipulations outlined in the annual Animal Damage Control Plan.

Big Game: Areas that can support woody vegetation establishment and respond to rest need to be identified, maintained, and managed. Browse is important in maintaining big game and upland bird populations. The BLM will minimize or prevent road and trail development on crucial big game and upland bird habitat areas.

Elk: The BLM will provide 410,796 acres of habitat on BLM land for elk in the Missouri Breaks, Highwood Mountains, Square Butte, Little Belt Mountains, Judith Mountains, and Little and Big Snowy Mountains. This would be consistent with the MFWP Elk Management Plan.

Bighorn Sheep: The BLM will provide 66,187 acres of habitat on BLM land to maintain and expand bighorn sheep in the planning area. This will also allow for new bighorn sheep populations in unoccupied habitat where suitable forage is available in the Missouri Breaks and Bull Creek areas.

Off-road vehicle use within elk and bighorn sheep habitat will be restricted seasonally to designated roads and trails to reduce wildlife harassment and provide habitat security. The BLM will plant lure crops on BLM land where this is determined to be necessary and feasible to draw elk from private cropland where depredation conflicts are occurring. Planting lure crops would be considered for small areas. Management to protect lure crops could include fencing, grazing methods, or a change in season-of-use for livestock. Planting and maintenance of lure crops would be most feasible under a cooperative arrangement with MFWP, other organizations, or individuals.

Domestic sheep grazing will not be allowed to overlap bighorn sheep habitat to ensure no contact between domestic sheep and bighorn sheep. This would prevent the spread of infectious diseases.

The following mitigation measures will be applied to prevent unnecessary or undue degradation on plans of operation within bighorn sheep habitat in the Little Rocky Mountains:

- Seasonal restrictions will be placed on mineral exploration during critical wildlife periods (December 1 through March 31) on a case-by-case basis to prevent unnecessary or undue degradation.
- Current reclamation will be emphasized to keep simultaneous disturbance to a minimum, thereby reducing wildlife habitat loss.
- Reclamation will utilize plant species suitable for wildlife forage if slope stability and revegetation concerns can be satisfied.
- Wildlife-proof fences will be required around solution ponds to prevent wildlife mortality.
- Offsite compensation will be considered to mitigate crucial habitat loss. This may include habitat improvement or replacement with comparable sites.
- Offsite water will be developed, if needed, to draw wildlife from active mining sites.

Headwaters RMP and Amendments

The 1984 RMP identifies the following management prescriptions that apply to wildlife and wildlife habitat:

Seasonal restrictions will continue to be applied where they are needed to mitigate impacts of human activities on important seasonal wildlife habitat. The major types of seasonal wildlife habitat and the time periods which restrictions may be needed are shown in Table 3-3.

Table 3-4
Seasonal Wildlife Restrictions

Habitat	Restricted Period
Elk and mule deer winter range	12/01 - 04/30
Elk and mule deer spring range (including calving and fawning)	04/15 - 06/30
Bighorn sheep winter range	12/01 - 04/30
Bighorn sheep spring range (including lambing)	04/15 - 06/30
Mountain goat winter range	12/01 - 04/30

Habitat	Restricted Period
Mountain goat spring range (including kidding)	05/01 - 06/30
Moose winter range	12/01 - 04/30
Raptor nest sites	Dates vary by species
Grizzly bear spring and summer range	04/01 - 09/01
Grizzly bear denning habitat	10/01 - 04/30

- Fish and wildlife habitat will be evaluated based on the concepts of critical, crucial, and essential habitats.
- Habitat improvement projects will be implemented, where necessary, to stabilize and/or improve wildlife habitat conditions.
- Sufficient forage will be provided for wildlife on seasonal habitat.
- Range improvements generally will be designed to achieve both wildlife and range objectives.
- Existing fences may be modified and new fences will be built to allow wildlife passage.
- Water developments will generally not be established for livestock where significant conflicts over vegetation would result.
- Water will be provided in allotments during seasonal periods of need for wildlife.
- Vegetation manipulation projects will be designed to minimize impacts to wildlife habitat and improve it, when possible.
- The MFWP will be consulted in advance of vegetation manipulation projects, including timber harvest activities involving: construction of new access roads into roadless elk summer/fall range; critical, crucial, or essential wildlife habitat; and sales of over 250,000 board feet.
- Animal control projects will be coordinated with the US Fish and Wildlife Service (FWS) and, in the case of aerial gunning, with the Montana Department of Livestock.
- Wildlife reintroduction proposals will be evaluated and recommendations will be made to the MFWP.
- Guidelines from the *Montana Cooperative Elk - Logging Study* (Lyons, et al., 1985) will continue to be used in formulation of forest activity plans affecting occupied grizzly bear and elk habitat.
- Elk management guidelines contained in the *Montana Cooperative Elk - Logging Study* (Lyon, et al., 1982) will be followed including: managing public vehicle access to maintain habitat effectiveness of security cover and key seasonal habitat for deer and elk; maintaining adequate untreated peripheral zones around important moist sites; maintaining adequate thermal and security cover on deer and elk habitat, particularly within timber stands adjacent to primary winter foraging areas; ensuring slash depth in clearcuts does not exceed 1½ feet; and generally discouraging thinning immediately adjacent to clearcuts.

Off-Highway Vehicle (OHV) EIS and Plan Amendment for Montana, North Dakota, and South Dakota (BLM, 2003c)

Specifies that:

- The BLM will consult with the FWS to ensure that any site-specific plans are not likely to jeopardize the continued existence of any species listed under the provisions of the Endangered Species Act of 1973 (ESA) or result in destruction or adverse modification of critical habitat.
- Access standards in effect for existing recovery plans will be followed in all site-specific plans.
- The authorizing officer can immediately close areas, roads, or trails if OHV use would cause considerable adverse, environmental effects to species listed or proposed for listing under the ESA.

Vegetation Treatment on BLM Land in Thirteen Western States Plan Amendment

Specifies that:

- Herbicides with minimum toxicity to wildlife will be used.
- Protective buffer zones will be provided along streams, rivers, and lakes and important riparian and xeroriparian areas along dry watercourses.
- Treatment periods will avoid bird nesting season and other critical seasons when loss of cover or disturbance by equipment would be detrimental to wildlife.
- Projects that may affect areas with threatened or endangered plants or animals will be postponed or modified to the presence of these species.

3.2.6.4 Special Status Species (Wildlife)

Current Management—Special Status Species

Threatened and endangered species are managed under the authority of the ESA, as amended. In addition, FLPMA provides for multiple use and protection of natural resources through habitat inventory and management of public lands and habitat management for fish and wildlife. The BLM's management of threatened and endangered species is guided by the principle that the continued existence of these species, as well as those that are proposed and candidates for listing, will not be jeopardized by BLM activities. The BLM accomplishes this management through coordination with the FWS and the MFWP. The BLM initiates Section 7 consultation with FWS before approving or implementing any action that may affect listed species or designated critical habitat. Streamlined consultation procedures detailed in the July 27, 1999, Memorandum of Agreement (MOA) and subsequent implementation guidance for Section 7 consultations are utilized to provide collaborative opportunities in the consultation process. Sensitive species, a BLM designation, are managed by the BLM with the same level of protection as is provided for candidate species (BLM Manual 6840.06C).

Relevant Plans and Amendments, Regulations, and Guidance Documents and Endangered Species Recovery Plans

- *Black-footed Ferret Recovery Plan* (1988)
- Revised Grizzly Bear Recovery Plan (2006)
- *Technical/Agency Draft, Revised Recovery Plan for Piping Plovers Breeding on the Great Lakes and Northern Great Plain* (1994)
- *Pallid Sturgeon Recovery Plan* (1993)
- Designation of Critical Habitat for Bull Trout, Final Rule (2005)
- *Bull Trout Draft Recovery Plan* (2002)

State Plans

- *Montana Bald Eagle Management Plan* (1994)
- Statewide Prairie Dog Conservation Plan (2002)
- *Management Plan and Conservation Strategies for Sage Grouse in Montana - Final* (2004)
- *Montana Comprehensive Fish and Wildlife Conservation Strategy* (2005)
- Montana Piping Plover Management Plan (2006)

The key documents that provide special status species management direction and goals for portions of BLM-administered lands in the RMP area are the *JVP RMP* and the *Headwaters RMP*. The *JVP RMP* states that no action will be initiated on BLM land which will jeopardize any candidate or federally-listed

threatened and endangered plant or animal species (BLM, 1994). For other special status species, the RMP states that impacts to state-designated species of special interest will be evaluated and applicable mitigation developed prior to any action on BLM land. The *Headwaters RMP* states that the BLM will work with the FWS to recover threatened and endangered species, including reintroduction efforts, and will consult with the FWS when any action may affect a threatened or endangered species (BLM, 1984).

Management Decisions

Specific management decisions regarding special status species in the *JVP* and *Headwaters RMPs* include the following:

JVP RMP

Bald Eagle: Areas that contain potential nesting habitat need to be evaluated to determine if high-potential habitat could be developed with habitat modifications. Food resources for nesting eagles would also be evaluated. If habitat modifications provide high-potential nesting habitat, the BLM will manage the area for bald eagles.

Piping Plover: No piping plovers have been found on BLM land in the resource area. If piping plovers are found on BLM land, their habitat should be protected. Disturbing activities would not be allowed within ¼ mile of any nesting piping plover from May 15 to July 30.

Headwaters Resource Management Plan and Amendments

Management actions within occupied grizzly bear habitat will be consistent with the goals and objectives of the *Grizzly Bear Recovery Plan* (FWS, 1993) and guidelines through the Interagency Wildlife Monitoring Program for mineral exploration and development.

3.2.6.5 Invertebrate Species

No decisions are currently in place for aquatic nuisance species.

3.2.6.6 Pathogens and Pest Species

The *Judith* and *Headwaters RMPs* do not specifically address pathogens. Refer to 3.2.6.3 Wildlife and Habitats Section for related information (bighorn and domestic sheep guidance).

3.2.7 Wildland Fire Ecology and Management

Current Management Objectives

The *Headwaters RMP* (1984) provides limited guidance on wildland fire management and prescribed burning. “. . . the primary fire protection objective will continue to be control, during the first burning period, of all wildfires on or threatening public land. Modified suppression areas may be established based on the consideration of the following criteria: values at risk; fire behavior; fire occurrence; beneficial fire effects, including but not limited to a reduction in fuel loading; fire suppression costs; and consistency with other agency plans and policies. Prescribed burning will continue to be used in support of resource management objectives.” (p. 24). Furthermore, “Timber harvest and prescribed fire may be used to improve wildlife habitat conditions.” (p. 32).

The approved *Judith Resource Area RMP* of the *JVP RMP* (1994) provides guidance for both wildfire actions and prescribed fire operations. Pages 24 and 25 of the approved plan explain this guidance. Overall “Fire will be managed in a manner most cost-efficient and responsive to resource management

objectives. The resource objectives identified in the RMP will provide the guidelines, direction and degree of suppression to be used.”

Both of the *Headwaters* and *JVP RMPs* were amended by the *Fire/Fuels Management Plan EA/Plan Amendment for Montana and the Dakotas* (BLM, 2003a), which provides guidance for wildland and prescribed fire. This amendment describes the use of prescribed fire for hazardous fuels reduction and resource benefit and provides guidance for wildland fire operations. Lands that have special designations such as wilderness study areas (WSAs) and ACECs are managed using BMPs to meet the objectives set forth in those plans. The *Central Montana Fire Zone (CMFZ) – LFO Fire Management Plan (FMP)* was developed in 2004 and tiers to the *Fire/Fuels Management EA/Amendment* as well as integrates wildland fire policy and fire management direction.

The approved *Butte RMP* (BLM, 2009b) provides guidance for wildland fire management. The northern portion of Lewis and Clark County has been incorporated into the Butte Field Office, but was not analyzed in the 2009 *Butte RMP*. Management actions within the *Butte RMP* will be integrated and used as the management actions within this plan to account for the boundary realignment.

Fire Management Planning Policy

The *Interagency Standards for Fire and Fire Aviation Operations* (BLM, 2013) (2013 Redbook) summarizes the following fire management planning policy:

Every area with burnable vegetation must have an approved Fire Management Plan (FMP). FMPs are strategic plans that define a program to manage planned and unplanned ignitions based on the area's approved Land or Resource Management Plan (L/RMP). FMPs must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.

The Fire Planning Handbook (H-9211-1) dated September 2012 provides instructions and procedures to carry out the policy and direction described in the BLM Fire Planning Manual (Manual 9211). The handbook contains guidance on how to meet the requirements of *Federal Wildland Fire Management Policy* guiding principles that were outlined in the BLM Fire Planning Manual.

The *CMFZ – LFO FMP* (2004b) includes wildland fire management actions and is in compliance with the 1995 *Federal Wildland Fire Policy* and the 2001 *Federal Wildland Fire Policy Update* guiding principles. These guiding principles are:

- Firefighter and public safety are the highest priority in every fire management activity.
- Assess risk to communities in terms of direct wildland fire impact and economic values, and implement effective programs to mitigate that risk through collaborative planning and projects.
- Implement the full range of wildland fire and fuels management practices, including prescribed fire, fire use, mechanical, chemical, biological, and cultural treatments that will move all affected landscapes toward desired future condition as described in the RMP.
- Establish partnerships with all interagency cooperators to facilitate coordinated fire management activities.
- Maintain an efficient and effective organization for the suppression of wildland fires consistent with the values at risk.

- Encourage close coordination and collaboration among specialists within and among the LFO, federal employees, interested organizations, private landowners, state, and local partners.
- Develop and use the best scientific information available to deliver technical and community assistance to support ecological, economic, and social sustainability.
- Allow wildland fire to protect, maintain, and enhance resources, while being allowed to function in its ecological role when appropriate for the site and situation.
- Create an integrated approach to fire and resource management.

Fire Management Goals, Objectives, and Considerations

The *Fire/Fuels Management Plan EA/Plan Amendment for Montana and the Dakotas* (2003) identifies the following goals:

- Provide greater protection to human life
- Reduce the risk and cost of severe wildland fires
- Sustain the ecological health and function of fire-adapted grasslands, shrublands, and forestlands
- Minimize the adverse effects of wildland fire suppression
- Use fire and other fuels management methods to reduce hazardous fuels while meeting other resource objectives (e.g., restore degraded fish and wildlife habitat)

The wildland fire management goals within the *CMFZ FMP* (2004b) are the same as the guiding principles listed above. Additionally, the approved *CMFZ FMP* establishes the following general management considerations, which comply with current land use plans, EAs, and the *Fire/Fuels Management Plan EA/Plan Amendment for Montana and the Dakotas* (2003a):

- Use fire to restore and/or sustain ecosystem health based on sound scientific principles and information balanced with other societal goals, including public health and safety, as well as air quality.
- Identify appropriate management response (AMR) goals, objectives, and constraints by specific FMUs within the LFO. All wildland fire management activities will be managed as described in the FMU guidance outlined in Section III.
- Provide an AMR on all wildland fires, with emphasis on minimizing suppression costs, considering firefighter and public safety, and benefits and values to be protected consistent with resource objectives, standards, and guidelines.
- Meet management goals and objectives through the use of prescribed fire, mechanical treatment, wildland fire for resource benefit, chemical treatment, biological treatment, and cultural treatment.
- Work collaboratively with communities at risk within the wildland urban interface (WUI) to develop plans for risk reduction. The *Federal Register* notice list is located at: <http://www.fireplan.gov/> and http://www.fireplan.gov/communities_at_risk.cfm and is not totally inclusive of all communities. The *Fire/Fuels Management EA Plan Amendment for Montana and the Dakotas* (2003a) also identified a list of some communities that are included within the LFO boundaries.
- Work collaboratively with federal, state, and local partners to develop cross-boundary management strategies and prioritize cross-agency fire management actions.
- Provide protection from wildland fire and wildland fire activities to all oil and gas infrastructure. Infrastructure includes pipelines, wellheads, pump stations, other related outbuildings, and access road systems. Gas and oil wells, pipelines, and other infrastructure are not inherently a fire hazard or a risk to start fires. These structures/systems do not provide increased suppression or fire prevention workload to the Central Montana Zone (CMZ) fire program.

Appendix H of the *CMFZ FMP* lists specific objectives for fire management activities.

In response to requirements of the Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME), the Wildland Fire Leadership Council (WFLC) directed the development of the *National Cohesive Wildland Fire Management Strategy (Cohesive Strategy)*, approved April 2014. The *Cohesive Strategy* is a collaborative process with active involvement of all levels of government and nongovernmental organizations as well as the public, to seek national, all-lands solutions to wildland fire management issues. The *Cohesive Strategy* is being implemented in three phases, allowing stakeholders to systematically develop a dynamic approach to planning for, responding to, and recovering from wildland fire incidents.

Phase I of the *Cohesive Strategy* development involved developing two documents: A National Cohesive Wildland Fire Management Strategy and The Federal Land Assistance, Management and Enhancement Act of 2009 – Report to Congress.

In Phase II, regional assessments were completed to address the national goals to the needs and challenges found at the regional and local levels. Regional committees examined the processes by which wildland fire, or the absence thereof, threatens areas and issues that Americans value including wildlife habitats, watershed quality, and local economics, among others.

Phase III involved taking the qualitative information gathered in Phase II and translating it into quantitative models that can help inform management actions on the ground. Regional *Risk Analysis Reports* (November 2012) and *Action Plans* (April 2013) have been finalized for the Western Region which encompasses the planning area.

The *Cohesive Strategy* is built on three fundamental goals (taken from the *Cohesive Strategy* document, no date):

- **Restoring and maintaining resilient landscapes.** The strategy must recognize the current lack of ecosystem health and variability of this issue from geographic area to geographic area. Because landscape conditions and needs vary depending on local climate and fuel conditions, among other elements, the strategy will address landscapes on a regional and subregional scale.
- **Creating fire-adapted communities.** The strategy will offer options and opportunities to engage communities and work with them to become more resistant to wildfire threats.
- **Responding to wildfires.** This goal considers the full spectrum of fire management activities and recognizes the differences in missions among local, state, tribal, and federal agencies. The strategy offers collaboratively developed methodologies to move forward.

The *National Cohesive Wildland Fire Management Strategy* supersedes the *10-Year Comprehensive Strategy* (2001) and its *Implementation Plans* (2002, 2006), which provided long-term implementation of the *National Fire Plan* objectives. The *National Fire Plan* was developed and implemented following a report to the President after the 2000 fire season.

Current Management

The Montana/Dakotas Fire/Fuels EA (2003) amended the approved *JVP RMP* (1994) and the *Headwaters RMP* (1984) to adopt standard fire management categories, which range from Category A where fire (including prescribed fire) is not desired at all to Category D where fire is desired and there are no constraints on its use. These categories are applied to the RMP planning area's fire management units (FMUs) in the CMFZ's current and approved *Fire Management Plan* (2004b).

Three of the five FMUs identified within the planning area (Big Open, Island Ranges, and Prairie Forest) are classified as Category B--areas where unplanned fire (natural or human caused) is likely to cause negative effects, including risks to private lands, urban interfaces, cultural resources, visitor use areas, and federally owned facilities. These effects can be minimized or avoided through fuels management, prevention of human-caused fires, or other strategies. The Snowies and Twin Coulee FMUs are also classified as Category B.

The Snowies FMU is a US Forest Service (FS) managed unit, but the BLM-CMFZ has primary fire suppression protection responsibilities. The Twin Coulee FMU is under the BLM Billings Field Office jurisdiction and the CMFZ has primary fire suppression protection responsibilities.

The northern portion of Lewis and Clark County (Butte FO) is located within the Island Ranges FMU and is classified as Category B. This portion of Lewis and Clark County is now managed by the Western District Fire Zone but is included in this plan due to office boundary restructuring in 2012.

The Breaks and Front FMUs have been identified as Category C—areas where fire is desired to manage ecosystems, but current vegetative condition, as well as social and political concerns create constraints on use. Vegetation and fuel buildup, as well as intermixed private lands, create such constraints in these FMUs. Emphasis on reducing unwanted ignitions, resources threats, and fuels accumulations are fire suppression and use considerations.

Each fire management category contains management constraints. A summary of these categories and constraints can be found on page 14 of this plan. The *CMFZ FMP* also lists management opportunities and constraints for each FMU within the planning area.

The *Federal Wildland Fire Policy* allows fire managers to manage a fire for multiple objectives and increase managers' flexibility to respond to changing incident conditions and firefighting capability while strengthening strategic and tactical decision implementation, supporting public safety and resource management objectives. Response to wildland fire is based on ecological, social, and legal consequences of fire. Policy implementation guidance allows two kinds of wildland fire: planned ignitions (prescribed fire) and unplanned ignitions (wildfires) (*Guidance for Implementation of Federal Wildland Fire Management Policy*, 2009).

The following guidelines should be followed to provide consistent implementation of federal wildland fire policy:

- Wildland fire management agencies will use common standards for all aspects of their fire management programs to facilitate effective collaboration among cooperating agencies.
- Agencies and bureaus will review, update, and develop agreements that clarify the jurisdictional inter-relationships and define the roles and responsibilities among local, state, tribal, and federal fire protection entities.
- Responses to wildland fire will be coordinated across levels of government regardless of the jurisdiction at the ignition source.
- Fire management planning will be intergovernmental in scope and developed on a landscape scale.
- Wildland fire is a general term describing any nonstructure fire that occurs in the wildland. Wildland fires are categorized into two distinct types:
 - Wildfires – Unplanned ignitions or prescribed fires that are declared wildfires.
 - Prescribed Fires – Planned ignitions.
- A wildland fire may be concurrently managed for one or more objectives and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in fuels, weather,

topography; varying social understanding and tolerance; and involvement of other governmental jurisdictions having different missions and objectives.

- Management response to a wildland fire on federal land is based on objectives established in the applicable *L/RMP* and/or the *Fire Management Plan*.
- Initial action on human-caused wildfire will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety.
- Managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

Burned Area Emergency Stabilization and Rehabilitation (ESR)

Current management considers rehabilitation of burned areas on a case-by-case basis. Treatments have included noxious plant control, soil stabilization structures, erosion filters, and seeding. The RMP could develop programmatic ESR guidance that would define resource condition criteria and processes to facilitate the decision, initiation, and implementation of rehabilitation plans and treatments.

Prescribed Fire

The *Fire/Fuels Management Plan EA/Plan Amendment* (2003a) discloses the cumulative effects of broad levels of fuels treatments, wildland fire suppression, and associated support treatments such as chemical weed treatments. The plan updated specific decisions in the *Headwaters RMP* (1984) and the *JVP RMP* (1994) to include:

- Direction for fire and fuels management needed to protect other resources values.
- Give broad levels of treatment over 10 years, allow timber harvested through community and/or hazardous fuels treatments to not be counted against the yearly allowable sales quantities, and allow the use of a wide variety of silvicultural prescriptions to meet fuels management objectives.

The CMFZ prescribed fire program is organized to treat natural fuel accumulations in order to meet resource management objectives, standards, and guidelines. Treatments have traditionally included wildlife habitat enhancement, site preparation for artificial and natural regeneration, range habitat improvement, and hazardous fuels reduction. Prescribed fire implementation requires an approved site-specific, prescribed fire plan as outlined in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (November 2013).

Fire Prevention, Community Assistance, and Education

Community wildfire protection plans (CWPPs) have been completed for all counties in the planning area. The BLM and other agencies provide funding and technical support. As directed by the Healthy Forest Restoration Act (HFRA), the plans must identify and prioritize areas for hazardous fuel reduction treatments that protect at-risk communities. In addition, the plans recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the counties (*Handbook for Wildland-Urban Interface Communities*, 2004). Through these CWPPs, the HFRA enables communities to influence how and where Forest Service and BLM implement fuels reduction projects. Counties are actively implementing fuels reduction projects from these planning efforts.

A comprehensive fire prevention plan has been completed for the planning area. The *CMFZ Wildland Fire Prevention, Education, and Mitigation Plan* (2012) provides guidance for the following sections of the *CMFZ FMP*: wildland fire prevention; fire restrictions and closures; community assistance (WUI

education, planning, and fuels treatment implementation on nonfederal lands); rural fire assistance, ready reserve ; fire investigation and trespass; and wildland fire ecology education.

3.2.8 Cultural and Heritage Resources

Cultural resources are recognized as fragile, irreplaceable resources with potential public, scientific, conservation, traditional, and experimental uses, and represent an important and integral part of our nation's heritage. The LFO encourages responsible scientific use of cultural resources by protecting and preserving examples of cultural and historical resources and by continuing to identify and evaluate cultural resources in accordance with existing laws, regulations, and guidelines, including: 36 CFR 800, Antiquities Act of 1906 (16 USC 432, 433); Historic Sites Act of 1935 (16 USC 461); National Historic Preservation Act of 1966 (NHPA) (16 USC 470, as amended); NEPA (43 USC 4321); Executive Order 11593 (36 CFR 8921); Historical and Archaeological Data-Preservation Act of 1974 (16 USC 469); FLPMA (43 USC 1701); Archaeological Resources Protection Act of 1979 (16 USC 470a et seq., as amended); and Executive Order 13007 (Indian Sacred Sites).

Since the 1994 *Judith RMP* and the 1983 *Headwaters RMP*, management of cultural resources has evolved in accordance with the BLM's obligations identified under Section 106 of the NHPA of 1966 and its amendments. Section 106 requires that every federal agency consider the potential effect an undertaking (as defined by 36 CFR 800) may have on any prehistoric or historic site eligible for listing in the National Register of Historic Places (NRHP) within the area of potential effect. If it is determined that a project or undertaking may have an adverse effect on a National Register-eligible property or properties, the project may implement mitigation measures so that effects are no longer adverse.

The LFO implements Section 106 by working through a protocol with the Montana State Historic Preservation Office (SHPO), which is a state version of the national programmatic agreement drawn up by the BLM's Washington Office, the National Council of SHPOs (NCSHPO), and the Advisory Council on Historic Preservation (ACHP). The Montana State protocol exempts certain inventories from consultation, namely those inventories where no historic properties were found. The LFO is also enabled to make determinations of eligibility for properties located on land it manages. All inventories and all decisions affecting cultural resources are documented in an annual report. Other changes described in the protocol establish that the SHPO is a planning partner with the BLM. This enables the SHPO to comment on projects that have not been identified as an undertaking, for example. When cultural resources are recorded on public land, the assessment of effects and consultation to mitigate those effects which are determined to be adverse are largely similar to the traditional Section 106 process. In 2012 the BLM, ACHP, and NCSHPO signed a new national programmatic agreement, which will require the Montana SHPO and the BLM in Montana to draft a new state protocol which may revise the way we satisfy our NHPA responsibilities.

In order to address the BLM's responsibilities under Section 110 of the NHPA and its amendments, the LFO has entered into cooperative agreements with various federal agencies, colleges, universities, and nonprofit organizations. Section 110 requires federal agencies to emphasize the preservation and enhancement of cultural resources directly under their jurisdiction as well as cultural resources on nonfederal land which may be affected directly or indirectly by agency projects or plans. These partners have completed preservation work on historic buildings, drafted NRHP nominations, developed and coordinated site stewardship efforts, monitored cultural properties, and presented public educational presentations.

Management Objectives

In the 1994 approved *Judith Resource Area RMP*, management of cultural resources was segregated into two components: compliance with existing laws/regulations and the management of cultural properties on BLM land. It stated that a cultural resource management plan would be prepared. That plan was never drafted.

The designation of the Square Butte Outstanding Natural Area (ONA) ACEC was done, in part, to protect cultural sites. The three primary resources directing its management are wildlife, cultural resources, and recreation.

Cultural resource program-specific guidance for land acquisitions and disposals is highlighted in Appendix C of the *Judith RMP*.

In the 1983 *Headwaters Final RMP/EIS*, cultural resources management focused on being in compliance with Executive Order (EO) 11593 and Section 106 of the NHPA, as amended. Management for individual sites was based on their placement in specific use categories: sociocultural use, current scientific use, management use, conservation for future use, or potential scientific use. Even though the BLM continues to define use categories, the types and definitions of the categories have changed since the drafting of the Headwaters document.

Consultation

Since the 1994 *Judith* and 1983 *Headwaters RMP*, Congress has passed several acts of legislation changing the way land management agencies interact with federally-recognized Native American tribes. Various acts direct the BLM to consult with tribal governments to improve stewardship of tribal resources outside of reservation boundaries. Ensuring the availability of both locations and resources required for traditional religious practices, the preservation of sacred features and locations, as well as the proper procedures for inadvertent discoveries of ancient human remains and associated grave goods, are all new responsibilities for the BLM since the RMPs were published. These responsibilities require the BLM to develop government-to-government relationships with federally-recognized Native American tribes that are known to have a historical association with the public land in the management unit. This often includes tribal governments no longer located in Montana.

The 1994 *Judith RMP* contains language that states the BLM will consult with Native American tribes when actions have the potential to affect areas of concern to the practitioners of traditional religions. The 1983 *Headwaters RMP* does not contain any specific decision guidance relating to tribal interests.

As part of the cultural resource program, the LFO will continue Native American consultation to identify any traditional cultural properties, sacred/religious sites, or special use areas. The LFO will send letters to the following tribes asking for their comments and input: Crow, Northern Cheyenne, Blackfeet, Fort Peck Sioux, Assiniboine, Gros Ventre, Chippewa, Cree, Nez Perce, Salish, Kootenai, and Shoshone-Bannock. Phone contact will be made to confirm tribes' interest in commenting and input, and consultation with interested tribes will continue throughout the planning process. If tribally-sensitive areas are identified or become known through tribal notification or consultation process, the tribes' concerns will be addressed through planning. The LFO will protect and preserve Native American cultural and sacred sites and Native American access to these sites whenever possible. The LFO will take no action that would adversely affect these areas or locations without consulting the appropriate federally-recognized Native American tribe.

3.2.9 Paleontological Resources

Guidance

The BLM has managed fossils as a valued public land resource for many years. Legal authority to manage fossils comes from a variety of laws, executive orders, and policies. The laws include the NEPA of 1969 and the FLPMA of 1976. Since the last RMP was produced, the Paleontological Resources Preservation subtitle of the Omnibus Public Land Management Act of 2009, also known by its popular name, the Paleontological Resources Preservation Act (PRPA), directs land managers within the Department of the Interior (DOI) agencies and the US Department of Agriculture (USDA), but not including either Indian or Military (Department of Defense [DOD]) lands, to manage and protect fossils using scientific principles and expertise. The PRPA does not make a distinction between the types of organism preserved; therefore, all paleontological resources, plants, invertebrates, and vertebrates are to be actively managed.

The paleontology program of the BLM utilizes Manual 8270 for Paleontological Resource Management, and its accompanying Handbook 8270-1 General Procedural Guidance for Paleontological Resource Management. Both of these documents were issued in July 1998. Instruction Memoranda (IM) 2008-009 presented guidelines for the Potential Fossil Yield Classification (PFYC) system for geologic units.

Additionally, several IMs that establish policy related to PRPA have been issued. Instruction Memoranda 2012-140 outlined the collection of paleontological resources, including casual collecting and the issuance of paleontological resource use permits. Instruction Memoranda 2012-141 outlined the policy of confidentiality of paleontological locality information as required by PRPA. Currently, the program leads are working to update all relevant guidance.

Resource Use

According to existing regulations and policies, the public may casually collect (without a permit) common invertebrate or plant fossils in reasonable quantities for personal, noncommercial use. Such casual collection of fossils may not involve power tools, and the activities may not cause disturbance to the surface that would have impacts on other natural or cultural resources. Commercial collection of fossils is not allowed. All other collection of fossils must be done under a permit issued by the BLM to a qualified paleontologist, either for research and educational purposes, or as salvage and mitigation of resources impacted due to surface-disturbing projects such as pipelines, oil and gas activities, and road development. All fossils collected under a permit remain the property of the federal government and must be kept in a qualified museum or university collection.

In addition to collection, either casually or scientifically with a permit, fossil resources can be used in education and outreach programs.

Current Management

Following the guidance of PRPA and other established policy, the BLM is actively managing paleontological resources. A current PYFC rank has been applied to all geologic units in the planning area. Information on the localities and fossils collected from within the area are being compiled so the resources can be better managed. Any proposed land action, including ground-disturbing actions, should be reviewed for the impact on paleontological resources.

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	No mention of paleontology/paleontological resources.	--
<i>Judith Resource Area RMP</i>	Paleontology The BLM will protect major paleontological resources of scientific interest. The BLM will issue permits only to qualified paleontologists to work on BLM land. Casual invertebrate fossil specimen collectors are not required to obtain a permit. Cave Resources The BLM will manage significant cave resources containing . . . paleontological values Significant cave resources discovered would have a cave management plan prepared. Lands: Withdrawal Review Blacktail Creek Paleontological Withdrawal: 320 acres was withdrawn in 1988 from settlement, sale, location, or entry under the general land laws, including the US mining laws, but not from leasing under the mineral leasing laws.	Passage of PRPA in 2009 has led to updated manual direction for the BLM. No cave resources containing paleontological values have been identified. The Blacktail Creek Paleontological Withdrawal was extended for 20 years in 2008.

3.2.10 Visual Resources

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> (p. 25)	The BLM will manage activities to comply with the visual resource management (VRM) policy. The BLM land within the planning area has been assigned a VRM class based on a process that considers scenic quality, sensitivity to changes in the landscape, and distance zone. The	The visual resource inventory (VRI) is currently being updated for the entire planning area in order to comply with the VRM policy. The BLM Manual 8400 (VRM) establishes direction and describes the use of the VRM

Decision Source	Current Management Decision/Policy	Status
	planning area has four classes, numbered I to IV. The lower the class number, the more sensitive and scenic the area.	process for BLM lands. The BLM Handbook 8410-1 defines the inventory process for determining visual values which leads to assignment of public lands into VRM classes.
<i>Headwaters RMP</i> (p. 16)	Visual resources will continue to be evaluated as a part of activity and project planning. Such evaluation will consider the significance of the proposed project and the visual sensitivity of the affected area. Stipulations will be attached, as appropriate, to assure compatibility of projects with management objectives for visual resources.	In the planning area, the plan focused on areas with VRM I and II classification, which included the Rocky Mountain Front units and the Devil's Kitchen unit. Management classes for all other public lands would be determined during activity and project planning, in accordance with BLM VRM policy. The VRI is currently being updated to for the entire planning area in order to comply with the VRM policy. The BLM Manual 8400 (VRM) establishes direction and describes the use of the VRM process for BLM lands. The BLM Handbook 8410-1 defines the inventory process for determining visual values which leads to assignment of public lands into VRM classes.

3.2.11 Wilderness Characteristics

The *Judith RMP*, *Headwaters RMP*, and subsequent amendments did not address wilderness characteristic resources.

3.2.12 Cave and Karst Resources

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> – Cave Resources	The BLM will manage significant cave resources. There is one significant cave identified in the planning area: Tate-Poetter Cave.	Implemented. Ongoing.

RESOURCE USES

3.2.13 Minerals and Energy Resources

3.2.13.1 Solid Leasables

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP – Oil Shale</i>	The BLM will provide opportunities for exploration and possible development of oil shale. Areas prospectively valuable for oil shale will remain open for issuing prospecting permits and leasing.	Implemented. Ongoing.
<i>JVP RMP – Coal</i>	The BLM will provide opportunities for coal exploration and production while maintaining nonmineral resource values. The planning area will be available for coal exploration licenses. Coal licenses to mine for domestic use will be available and use per family may not exceed 20 tons annually. Coal leasing by application will remain available for underground and surface mining consideration through the plan amendment process.	Implemented. Ongoing.
<i>JVP RMP – Coal</i>	Prior to issuing coal leases, unsuitability criteria will be applied and a plan amendment prepared.	Implemented. Ongoing.

3.2.13.2 Oil and Gas Leasables

In addition to the BLM, the State of Montana also has jurisdiction through a combination of existing federal and state laws and regulations in the Lewistown RMP area. Fluid minerals are managed as leasable minerals commodities on public lands. Many, if not most, of these same governing regulations also apply to land where another federal agency manages the surface. Split estate lands also occur within the Lewistown RMP area where the BLM also manages for oil and gas exploration and development where the mineral estate is federal while the surface estate is nonfederal. In rare instances, there can also be reverse split estate where the surface is owned by the federal government and the minerals could be owned by a private (fee) landowner or the State of Montana.

During the leasing and development stage of oil and gas development, the appropriate level of NEPA analysis is performed. The Montana Board of Oil and Gas Conservation is the state agency in charge of oil and gas development, while MDEQ regulates surface water discharge and air emissions from oil and gas production and processing. Other water disposal methods may involve additional federal and state agencies.

The Central Montana District Office, in conjunction with the LFO and Great Falls Oil and Gas Field Office, is responsible for supervising and managing all exploration, development, and production operations on federal oil and gas leases. The oil and gas program can be broadly categorized into the following four functional areas:

- Lease operations;
- Inspection and enforcement of lease operations;
- Reservoir management; and
- Geophysical exploration.

The main objectives of the BLM's oil and gas program are to foster a fair return to the public of its mineral resources, to ensure environmentally-acceptable activities within the program, and to provide for the maximum recovery of the fluid mineral resources without compromising the long-term health of the land. The BLM's management of the oil and gas program accomplishes several functions in support of the main objectives including: (1) supporting the domestic need for energy resources; (2) making eligible lands available for leasing through proper planning; (3) timely processing of applications and notices for exploration and development; and (4) conducting inspections of operations and ensuring compliance with lease terms and regulations.

Issues and Management Concerns

- What areas are suitable or not suitable, particularly those with no surface occupancy areas, for oil and gas development activity? Should these existing areas be changed?
- Are the current timing limitation stipulations effective in protecting resource values (i.e., wildlife, soil, and watershed)? Should they be changed?
- Disposal of produced water via surface water discharge permits (i.e., National Pollution Discharge Elimination System [NPDES] permits), underground injection permits, or by using evaporation ponds.

A number of items over the past 2½ decades have resulted in necessary changes to BLM planning documents. The *JVP RMP*, which was signed in 1994, was determined to be in violation of NEPA, ESA, and NHPA in regards to oil and gas leasing per a March 31, 2004, decision made in US District Court for the District of Montana by Judge Donald W. Molloy. As a part of Judge Molloy's decision, the BLM was

ordered to prepare a new environmental document that would adequately address potential impacts from oil and gas leasing prior to the issuance of any new oil and gas leases.

One concern that has arisen regarding oil and gas leasing and development is management of split estate lands. For purposes of this report, split estate refers to situations where the surface is owned by a private or other nonfederal party while the federal government owns the subsurface minerals, and so holds the rights to lease the minerals for oil and gas development. A report to Congress regarding split estate issues was submitted in December 2006 with recommendations as to how the BLM should modify its procedures. The report documents the findings resulting from consultation on the split estate issue with affected private surface owners, the oil and gas industry, and other interested parties. The BLM issued Instruction Memorandum (IM) 2007-165 to address implementation of recommendations for several of the issues contained in the Split Estate Report to Congress. The implementation of action items important to the Lewistown RMP are designed to increase notice to, and involvement of, private surface owners in the BLM land use planning process with the help of cooperating agencies or local governments.

Also, in addition to this, numerous lands have been placed off-limits to oil and gas leasing along with lands adjacent to the Rocky Mountain Front identified as the Minerals Withdrawal Area (Baucus bill). This action effectively removed 92,838 acres from the oil and gas leasing program.

The planning area currently has a high fluid minerals program activity with high leasing, exploration, and development interests. There are active oil and gas leases across the planning area which creates a pressing need for new inventories and revised data. This information is needed prior to designing lease stipulations and resolving split estate issues.

The BLM-administered lands in the RMP area that fall under the jurisdiction of the 1994 *JVP RMP* are currently closed to leasing until completion of the Lewistown RMP because of the March 31, 2004, judgment; however, operators in that area are currently being allowed to develop their existing leases in accordance with the existing lease terms and any mitigation measures prescribed at the time of application for permit to drill (APD) approval. Oil and gas leasing continues to occur on BLM-administered lands on a very limited basis in the RMP area that falls under the jurisdiction of the 1994 *JVP RMP*.

The Great Falls Oil and Gas Field Office, in conjunction with other field offices, conduct onsite inspections to identify environmental concerns and to develop mitigation measures prior to issuing an approval of an APD. Enforcement action is taken in cases where operations are not being conducted within these guidelines or regulations.

3.2.13.3 Nonenergy Solid Leasables

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> – Solid Minerals (other than Coal and Oil Shale)	The BLM will allow exploration and development of solid mineral resources (other than coal and oil shale), as authorized under the 1920 and 1947 Mineral Leasing Acts. Prospecting permits will be available for all land not closed to mineral leasing in conformance with 43 CFR 3500.	Implemented. Ongoing.

3.2.13.4 Locatable Minerals

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> – Nonenergy Mineral Resources	All federal minerals are available for exploration and development unless withdrawn.	Implemented. Ongoing.
<i>JVP RMP</i> – Nonenergy Mineral Resources	A notice is screened for impacts that constitute unnecessary or undue degradation. Processing a notice is not a federal action and there is no formal environmental process.	Implemented. Ongoing.
<i>JVP RMP</i> – Nonenergy Mineral Resources	[When] a plan of operations is filed with the BLM, the proposed action is analyzed and those mitigating measures needed to prevent unnecessary or undue degradation are required for approval.	Implemented. Ongoing.

3.2.13.5 Salable Minerals

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> – Mineral Materials	All lands not withdrawn are available for mineral material disposal. Mineral material permits are considered on a case-by-case basis and issued at the discretion of the authorized officer.	Implemented. Ongoing.
<i>JVP RMP</i> – Mineral Materials	The BLM will issue sales contracts for mineral materials where disposal is deemed to be in the public interest, while providing for reclamation of mined lands and preventing unnecessary or undue impact to nonmineral resources.	Implemented. Ongoing.
<i>JVP RMP</i> – Mineral Materials	The BLM will continue meeting the demand of local governments for sand and gravel needed for road surfacing and maintenance.	Implemented. Ongoing.

3.2.14 Livestock Grazing Management

Decision Source

JVP RMP/Final EIS (1992, p. 12).

Current Management Decision/Policy

Livestock grazing will continue to be managed through development and monitoring of AMPs, or similar grazing plans, and supervision of grazing use. The AMPs will be developed and maintained to achieve multiple-use objectives in accordance with the *Missouri Breaks Grazing EIS* as modified by the proposed *JVP RMP/Final EIS* (1992). Methods and guidelines from these EISs will be followed to maintain or improve ecological condition, enhance vegetation production, maintain and enhance wildlife habitat, protect watersheds, reduce bare ground to the target soil vegetation cover by soil subgroups, and to minimize livestock/recreation conflicts. The AMPs will implement some form of grazing method (i.e., rest rotation, deferred rotation, seasonal, or other methods). Livestock grazing management methods will be implemented prior to land treatments.

All allotments have been assigned to a management category, depending on the resources and problems contained in the allotment. The three categories - Improve (I), Maintain (M), and Custodial (C) - reflect resource conditions and economic considerations for each allotment. The terms maintain, improve, and custodial relate to resource objectives for the allotment (i.e., whether conditions need to be improved, maintained, or if custodial management is appropriate because of relatively limited resources and resource problems). The BLM's allotment categorization system will continue to determine priorities for implementing AMPs, spending range improvement funds, and monitoring. Allotments will be subject to recategorization based on changes in resource conditions, as determined through monitoring and priority changes made through the proposed *JVP RMP/Final EIS* (1992).

Decision Source

Headwaters Final RMP/EIS (p. 18).

Current Management Decision/Policy

Allotment Categorization

All grazing allotments in the resource area have been assigned to one of three management categories based on present resource conditions and the potential for improvement. The M allotments generally will be managed to maintain current satisfactory resource conditions; I allotments generally will be managed to improve resource conditions; and C allotments will receive custodial management to prevent resource deterioration.

Allotment-specific Objectives for the Improvement Category

Multiple-use management objectives have been developed for each allotment in the I category. Future management actions, including approval of AMPs, will be tailored to meet these objectives. However, the priorities assigned to achieving objectives for wildlife habitat, watershed, vegetation condition, and livestock forage production differ between alternatives.

Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota - Lewistown (August 1997): Standards are statements of physical and

biological condition or degree of function required for healthy, sustainable rangelands. Achieving or making significant and measurable progress towards these functions and conditions is required of all use of public rangelands.

Decision Source

JVP RMP/Final EIS (1992 p. 12).

Current Management Decision/Policy

About 40 percent of the vegetation (133,233 AUMs) will continue being allocated to livestock in the Judith Resource Area. Short-term livestock grazing reductions will be implemented, as necessary, during drought or other emergencies.

All vegetation increases resulting from livestock grazing management and/or land treatments within an allotment will be allocated to watershed, until the soil and vegetation resource is stabilized at a satisfactory condition as determined by an interdisciplinary team.

Decision Source

Headwaters Final RMP/EIS (p. 18).

Current Management Decision/Policy

The preferred alternative will result in minor changes from current management direction. Short-term adjustments in livestock forage allocations will be proposed for 26 allotments containing 88,596 acres of public land, resulting in a 2,204-AUM net decrease in licensed livestock use within the resource area. Livestock grazing on 301 allotments will remain at current levels. Future upward or downward adjustments in livestock use will be based on monitoring studies. Range improvements, treatments, and grazing systems will be implemented in accordance with current BLM policy, and will be designed to achieve specific multiple-use objectives identified in the AMP for each allotment.

Implementation Priorities

- Continue to implement the annual base program for range management in the LFO (issuance of permits and bills, transfers, day-to-day routine business, etc.).
- Achieve the resource objectives for grazing management as stated previously under Resource Objectives and Recommendations in this document. This is dependent upon receiving sufficient funding to complete range improvements, and adequate staffing to implement grazing systems, supervise grazing use, and monitor resource changes.
- First priority for rangeland improvements will be given to I category allotments with M and C category allotments being of a lower priority. Further priority has been given on an allotment-specific basis. Ranking is subject to change based upon changes in resource conditions, project redesign, or private contributions by individual operators.

3.2.15 Recreation and Visitor Services

Current management direction is based on RMP management objectives, activity level plans, and other recreation management direction including 43 CFR 8340, Subchapter H, Recreation, Part 8342 and Part 8364, and H-1601-1, Land Use Planning Handbook, Appendix C – Recreation and Visitor Services. In

addition, recreation management on public lands administered by the BLM is authorized under the laws, executive orders, and policies identified in Chapter 6 of this AMS.

Decision Source	Current Management Decision/Policy	Status
JVP RMP (p. 22)	The BLM will maintain and/or enhance the recreational quality of BLM land and resources to ensure enjoyable recreational experiences.	Implemented on all actions. Ongoing.
JVP RMP (p. 22)	Managing visitor services including a permit system, interpretive programs, visitor contact, and efforts to improve the BLM's image with public land users.	Implemented on all actions. Ongoing.
JVP RMP (p. 22)	Maintaining all facilities where the public comes in contact with the BLM roads, trails, signs, recreation sites, and buildings.	Implemented on all actions. Ongoing.
JVP RMP (p. 22)	Developing partnerships among other agencies, organizations, and private citizens.	Implemented on all actions. Ongoing.
JVP RMP (p. 22)	Enhancing budget/marketing techniques which showcase the BLM's land management.	Implemented on all actions. Ongoing.
JVP RMP (p. 22)	Recreation emphasis will be to develop and maintain opportunities for dispersed recreational activities such as hunting, scenic and wildlife viewing, and driving for pleasure. Methods to achieve these opportunities include emphasizing public access and the Watchable Wildlife and Back Country Byways programs. The BLM will support dispersed recreation for the public to support local, regional, and national needs. The BLM will not construct undeveloped or developed recreation sites based strictly on local use, unless these sites can be realized through partnerships with other government entities, local service organizations, etc.	"BLM has new policy direction to manage recreation and visitor services (Recreation Strategy IM 2014-094). BLM's recreation strategy repositions all program resources — recreation setting management and visitor services, program funding, operational knowledge and skills, and the BLM — to support community values. Program has adopted an outcome-focused approach to planning and management. This approach requires coordination with public and private visitor service providers (1) to manage recreation settings, services, and facilities, and (2) to provide positive recreation experiences and outcomes." <i>(BLM Recreation Strategy: Connecting with Communities</i>

Decision Source	Current Management Decision/Policy	Status
		<i>Years 2014-2019, p. 13)</i>
<i>JVP RMP (p. 22)</i>	The BLM will use signs, maps, and brochures to identify recreation resources for the public.	Partial implementation. Signs are currently being replaced. Surface ownership maps are used as recreation maps, but don't directly point out all recreation sites. A recreation site brochure exists, but needs updating. A brochure of current trails would be valuable.
<i>JVP RMP (p. 22)</i>	A pack in/pack out garbage policy will be implemented throughout the planning area, except for developed recreation sites where an entrance fee is assessed. The BLM will provide sanitation and maintenance services for all developed recreation sites. Partnerships will be sought to help maintain recreation sites.	Implemented. No recreation sites in LFO have an entrance fee. The BLM provides sanitation and maintains sites. Local groups and youth organizations help maintain trail systems and the recreation sites.
<i>JVP RMP (p. 22)</i>	Implementation of extensive recreation management areas (ERMAs). Sixteen undeveloped recreation sites associated with these fishing reservoirs: Buffalo Wallow, Hopalong, Holland, Upper Dry Fork, Lower Dry Fork, Jakes, Crooked Creek, Dry Blood, South Fork Dry Blood, Yellow Water, Drag, Payola, Fritzner, Mauland, Box Elder/Vogel, and Cotton Dam. These sites will receive minimal maintenance.	Known ERMAs receive minimal maintenance.
<i>JVP RMP (p. 23)</i>	Implementation of special recreation management areas (SRMAs): Judith Mountains SRMA, Snowy Mountains SRMA, and Judith River SRMA.	Partial implementation.
<i>Headwaters RMP (p. 15)</i>	A broad range of outdoor recreation opportunities will continue to be provided for all segments of the public, commensurate with demand.	Implemented on all actions. Ongoing.
<i>Headwaters RMP (p. 15)</i>	Trails and other means of public access will continue to be maintained and developed, where necessary, to enhance recreation opportunities and allow public use.	Implemented on all actions. Ongoing.
<i>Headwaters RMP (p. 15)</i>	Developed recreation facilities receiving the heaviest use will receive	Implemented on all actions. Ongoing.

Decision Source	Current Management Decision/Policy	Status
	first priority for operation and maintenance funds. Sites that cannot be maintained to acceptable health and safety standards will be closed until deficiencies are corrected.	
<i>Headwaters RMP</i> (p. 15)	Investment of public funds for new recreation developments will be permitted only on land identified for retention in public ownership.	
<i>Headwaters RMP</i> (p. 15)	Recreation resources will continue to be evaluated on a case-by-case basis as a part of project level planning. Such evaluation will consider the significance of the proposed project and the sensitivity of recreation resources in the affected area. Stipulations will be attached, as appropriate, to assure compatibility of projects with recreation management objectives.	Implemented on all actions. Ongoing.

3.2.16 Travel, Transportation Management, and Access

Decision Source	Current Management Decision	Status
<i>OHV FEIS ROD</i> (p. 1)	No motorized, wheeled, cross-country travel. Limited motorized travel to existing roads and trails on BLM-managed lands.	In December 2003, all BLM field offices completed a prioritized list of areas for site-specific route designations as directed by the <i>OHV EIS</i>. Route inventories are currently being completed for the Lewistown Field Office. Route evaluations will follow and then lead to travel management plans to be completed after the RMP. The RMP should state that the area's designation will change from "limited to existing roads, primitive roads, and trails" to "limited to designated roads, primitive roads, and trails upon the completion of the travel management plans."

Decision Source	Current Management Decision	Status
OHV FEIS	The open designations (seasonal, all year, or intensive) are developed to provide for OHV use, including off-road, cross-country use within designated areas. Intensive use areas are generally defined as public lands with no restrictions on where OHVs can be driven and where no compelling resource protection needs, user conflicts, or public safety issues exist to warrant limiting cross-country travel. Limited and closed designations are imposed to help protect natural resources and minimize conflicts among various users of public lands. The limited designation applies to areas and trails where OHV use is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), or limiting use to existing and designated roads and trails. The closed designation applies to areas and trails where OHV use is permanently or temporarily prohibited. In 1998, there were 5,841,000 acres of the BLM land in Montana and North and South Dakota designated as open to motorized cross-country travel, including 1,154,000 acres in the Lewistown Field Office.	In January 1999, the BLM and the FS initiated the <i>Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota, and South Dakota (OHV EIS)</i>. This EIS (completed in 2003) considered various ways to minimize the potential for resource damage from cross-country OHV use.
OHV FEIS (p. 3)	Existing laws and regulations provide management direction to control and direct the use of OHVs on public lands to protect resources, promote safety, and minimize conflicts. These laws and regulations give BLM the ability to restrict or prohibit OHV use to minimize: • Damage to soil, watershed, vegetation, or other resources of public land; • Harm to wildlife, wildlife habitat; and • Conflict between the use of OHVs and other types of recreation and land uses currently authorized.	Ongoing.

Decision Source	Current Management Decision	Status
<i>JVP RMP</i> (p. 86)	The BLM will restrict ORV use on BLM land yearlong or seasonally to designated roads and trails or close specific areas to protect the resource values in ACECs; preserve and protect the wilderness values in the WSAs; protect vegetation and soils to maintain watershed and water quality; reduce user conflicts; and reduce harassment of wildlife and provide habitat security.	Implemented on all actions. Ongoing.
National objectives BLM Manual H-8342-1 43 CFR 8340	Each federal agency is required to designate areas and trails for OHV use or restriction. Area and trail designations are completed during the RMP planning process in accordance with BLM regulations (43 CFR 8340) and are limited to the following three management categories: • Open: Areas used for intensive OHV use where there are no compelling resource needs, user conflicts, or public safety issues to warrant limiting cross-country travel. Open refers to areas and trails where all types of vehicle use are permitted at all times and anywhere in the area subject to the operating regulations and vehicle standards. • Limited: Areas or trails where the BLM must restrict OHV use in order to meet specific resource management objectives. These limitations may include the following: limiting the time; number, or types of vehicles; limiting the time or season of use; permitted, licensed use only; limiting use to existing roads and trails; and limiting use to designated roads and trails. The BLM may impose additional limitations, as necessary, to protect other resources, particularly in areas that OHV enthusiasts use intensely or where they participate in competitive events. Limited areas are those areas that may be	Open, Limited, and Closed designations will be completed during the RMP process. After the RMP, travel management planning will begin and the designation of individual roads, primitive roads, and trails will be addressed as an implementation level plan tiered from the RMP.

Decision Source	Current Management Decision	Status
	restricted at certain times, in certain areas, and/or to certain vehicular use. • Closed: This designation is used if closure to all vehicular use is necessary to protect resources, ensure visitor safety, or reduce conflicts. Closed areas or trails are where the use of off- road vehicles is permanently or temporarily prohibited.	
<i>Headwaters RMP</i> (p. 15)	Travel planning, including the designation of areas Open, Restricted, and Closed to motorized vehicle access, will remain a high priority for public land (in the planning area) in the following areas: the Rocky Mountain Front; Missouri and Smith River corridors; and other seasonally important wildlife use areas.	Travel planning for travel management areas (TMAs) in Greater Sage-grouse locations has taken a higher priority than those addressed in the <i>Headwaters RMP</i> and will be completed before lesser high priority sage-grouse habitat areas.
<i>Headwaters RMP</i> (p. 15/16)	Public land within areas identified as open to motorized vehicle use generally will remain available for such use without restrictions. Exceptions to this general rule may be authorized after consideration of the following criteria: • The need to promote user enjoyment and minimize user conflicts; • The need to minimize damage to soil, watershed, vegetation, or other resource values; • The need to minimize harassment of wildlife or significant degradation of wildlife habitats; and • The need to promote user safety.	Implemented on all actions. Ongoing.
<i>Headwaters RMP</i> (p. 16)	Restrictions and closures will be established for specific roads, trails, or areas only where problems have been identified. Areas not designated as restricted or closed will remain open for motorized vehicle use.	Implemented on all actions. Ongoing.

3.2.17 Lands and Realty

3.2.17.1 Land Use Authorizations

This section discusses various land use authorizations which include rights-of-way (ROWs), leases, permits, and easements.

Rights-of-Way (ROWs)

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i>	Rights-of-way outside of avoidance areas and WSAs will be considered on a case-by-case basis with appropriate stipulations from BLM Manual Handbook H-2801-1 incorporated into the ROW grant (p. 27).	Implemented.
<i>Headwaters RMP</i>	Public land within identified windows is available for utility and transportation corridor development (p. 15).	Implemented.
<i>Headwaters RMP</i>	Public land along the Rocky Mountain Front will continue to be managed as an avoidance area. Public land within avoidance areas generally will not be available for utility and transportation corridor development. Exceptions may be permitted based on consideration of the following criteria: type of and need for facility proposed; conflicts with other resource values and uses including potential values and uses; and availability of alternatives and/or mitigation measures.	Implemented.
<i>JVP RMP and Headwaters RMP</i>	Long-term occupancy of the public lands for roads, power lines, pipelines, communication sites, and irrigation ditches is authorized by granting a ROW. The ROWs are to be removed and reclaimed upon termination of the grant.	Implemented.

Leases, Permits, and Easements

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> (p. 30)	Leases/permits (other than for cabin site leasing) which may be for agricultural, occupancy, and film will be considered on a case-by-case basis.	Implemented.

3.2.17.2 Land Tenure

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> (p. 84)	The BLM would pursue acquisitions as opportunities arise through exchange or purchase with willing proponents and/or sellers. The BLM recognizes and respects private property rights and would not use condemnation to implement land rights and would not use condemnation to implement land tenure adjustments under this land use plan. Acquisitions could include private, state, or other land that would meet the objectives of the <i>State Director's Guidance on Land Pattern Review and Land Adjustment</i> (1984) and the criteria in Appendix A (p. 267). Private, state, and other lands meeting the criteria in Appendix A would be in conformance with this land use plan. The main objective would be to attain a BLM land pattern which balances multiple resource values and brings about better manageability. Lands acquired would have multiple resource values such as access, riparian-wetland areas, ACECs, recreation, and wildlife habitat. There are no BLM lands identified for disposal by sale within the Lewistown FO planning area (<i>JVP RMP</i>, p. 30).	Implemented.
<i>Headwaters RMP</i> (p. 52)	Assuming that willing buyers and/or exchange proponents can be located, the preferred alternative would result in a significant change from current management direction of retaining essentially all BLM-administered land	Implemented.

Decision Source	Current Management Decision/Policy	Status
	in public ownership. In the future, tracts that are small, isolated, inaccessible, and have low public resource values would be disposed of through sale or exchange. Some nonfederal land with high public values would be acquired through exchange in order to consolidate public ownership within retention areas. Sale is the preferred method of disposal when exchange is not feasible (<i>Headwaters RMP</i>, p. 21). All land tenure adjustments would be subject to disposal/acquisition criteria identified in the <i>Headwaters RMP</i> on page 20.	

3.2.17.3 Utility Corridors and Communications Sites

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i>	The <i>JVP RMP</i> did not identify any corridors within this planning area because of the small amounts of BLM land along occupied corridors.	Not applicable (N/A).
<i>JVP RMP</i>	Communication sites ROWs will be confined to the Judith Peak and South Moccasin Mountains communication sites and will be used for existing and future communication facilities (p. 30).	Implemented.
<i>Headwaters RMP</i>	Public land within identified exclusion areas will not be available for utility and transportation corridor development. Public land within identified windows is available for utility and transportation corridor development. All other public land generally is available for utility and transportation corridor development. Exceptions will be based on consideration of the criteria identified within the plan. Applicants will be encouraged to locate new facilities within existing corridors.	Implemented.

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i>	Public land along the Rocky Mountain Front will continue to be managed as an avoidance area. Public land within avoidance areas generally will not be available for utility and transportation corridor development. Exceptions may be permitted with specific criteria.	Implemented.
<i>Headwaters RMP</i>	There are no identified communication sites within the <i>Headwaters RMP</i> .	N/A.

3.2.18 Renewable Energy

Decision Source	Current Management Decision/Policy	Status
<i>JVP RMP</i> <i>Headwaters RMP</i>	No management decisions issued relating to renewable energy.	The BLM Washington Office issued an IM for the ROD for the <i>Programmatic EIS on Wind Energy Development</i> and guidance on processing ROW applications for wind energy projects on public lands administered by the BLM. It is BLM general policy, consistent with the National Energy Policy of 2001 and the Energy Policy Act of 2005, to facilitate environmentally-responsible commercial development of solar energy projects on public lands and to use solar energy systems on BLM facilities where feasible. Instruction Memoranda No. 2005-006, Solar Energy Development Policy, states: Applications for commercial solar energy facilities will be processed as ROW authorizations under Title V of FLPMA and Title 43, Part 2802 of the CFR. Concentrating solar power (CSP) or photovoltaic (PV) electric-

Decision Source	Current Management Decision/Policy	Status
		generating facilities must, however, comply with BLM's planning, environmental, and current ROW application requirements, as do other similar commercial uses. The BLM ROW project managers are available to coordinate the planning, environmental, application, permitting, and monitoring process. The BLM will evaluate the feasibility of installing PV systems on administrative facilities and projects involving resource monitoring, range improvements, public safety, and recreation projects. Project planning and design should incorporate an appropriate analysis to determine the feasibility, cost, and benefits of using PV systems.

3.2.19 Withdrawals

Decision Source	Current Management Decision/Policy	Status
FLPMA	Mineral withdrawals over 5,000 acres require notice to Congress. In order to withdraw federal minerals, an 'Application for Withdrawal or Extension Supplemental Justification Questionnaire' must be completed (per DOI Departmental Manual – 603 DM 1 – Land Withdrawal Program).	Implemented.

3.2.20 Forest, Woodland, and Special Products

Current Management Practices

The basic policy for the management of public domain forest lands is set forth in FLPMA, which requires public lands to be managed under the principle of multiple use and sustained yield without permanent impairment of the productivity of the land and the quality of the environment. Within this broad

directive, it is the BLM's policy to manage public domain forest lands to: contribute to meeting the nation's demand for wood products; manage the timber resources under the principles of multiple use and sustained yield; obtain fair market value for timber and other forest products sold and removed; improve timber and forest products utilization; and facilitate the management and public use of forest land. In addition, decisions affecting forest management within the RMP planning area come from the following documents and the associated guidance:

Headwaters Final RMP/EIS (1992, p. 23).

General

Public land within high priority forest management areas will be available for a full range of forest management activities. Major forest activity plans (also known as compartment management plans) generally will be required prior to initiating forest management activities in such areas. Exceptions will be allowed for small sawlog or commercial thinning sales. Exceptions will also be allowed for post and pole sales sold on a public demand basis, and for emergency salvage sales of insect, weather, or fire-killed timber of less than 250,000 board feet. These sales will be covered by an EA and a checklist of contract stipulations.

Public land within low priority forest management areas will also be available for a full range of forest management activities. However, forest activity plans will be abbreviated to fit the intensity of management. Public land within set aside areas will not be available for the harvest of forest products. Firewood gathering by individuals for home use will be permitted on most accessible forest land that is available for the harvest of forest products. Permits will cost \$10 each and are good for a maximum of 10 cords. Occasional free use may be authorized to clean up specific concentrations of debris.

Implementation

Roads will be constructed to the minimum standards necessary to remove the timber, unless the roads will be needed for other public purposes requiring a higher standard.

Silvicultural prescriptions will be consistent with accepted methods related to site, species, habitat types, and the individual requirements of the forest stand. Tractor logging generally will be limited to slopes with average gradients of less than 50 percent, and the season of logging will be limited to avoid soil compaction and rutting. Road locations will be determined on the basis of topography, drainage, soils, and other natural features to minimize erosion. Skid roads will be rehabilitated by seeding and/or scarification. Spur roads will be left in a condition that will minimize erosion and encourage stabilization. Slash disposal will be done in a manner conducive to revegetation and advantageous to the passage of big game. Slash will be burned, when necessary, and such burning will be in conformance with state air pollution regulations. Logging methods in riparian areas will be designed to minimize the amount of sediment-laden overland flow that reaches stream channels. Logging units will be laid out in a manner that will mitigate the risk of windthrow, and the selection of trees in shelterwoods will be made in a manner that will improve the genetic composition of the regenerated stand. Disturbed areas will be artificially revegetated when natural forest regeneration cannot be reasonably expected in 5 to 15 years. Guidelines from the *Montana Cooperative Elk Logging Study* (FS 19821) will be utilized, where applicable, in the formulation of forest activity plans. In concert with the timber management program, a snag management program will be implemented to enhance habitat for cavity-nesting birds.

General

The BLM will allow the harvest of forest products within the average allowable cut of 650 thousand board feet (MBF) per year for the Judith, Valley, and Phillips RAs and will meet the demand for minor forest products as feasible. Forest products will be sold at fair market value and cutting plans will be coordinated with adjacent landowners, when possible. Timber sales will be with wildlife habitat objectives in mind. Even though there are approximately 78,200 acres of productive forest land in the Judith, Valley, and Phillips RAs, only 29,000 of these acres support the timber base. The 49,200 acres in the Breaks are not in the timber base due to fragile soils, steep slopes, dry sites, crucial wildlife habitat, and poor timber quality. However, forest products may be harvested from these areas on a selected sustained-yield basis.

Implementation

Commercial thinnings will be used as a silviculture practice on intensively-managed forest lands to increase production of stands between 30 and 90 years of age. Christmas trees for personal use may be cut throughout the planning area, except in the WSAs and recreation sites. Areas for commercial Christmas tree cutting will be considered on a case-by-case basis. Permits will be issued for fuelwood (dead and/or down) materials for personal use on a demand basis outside of the WSAs. Dead and down trees may be cut from cottonwood riparian areas on a case-by-case basis. The permits will contain a stipulation to identify and protect trees with significant wildlife value. No controls of endemic forest insect infestations are proposed. Epidemic infestations will be subject to control only where biological evaluations clearly demonstrate the need and feasibility of the action, or where the infestation is causing other damage such as creating conditions for catastrophic wildfires. The following timber harvesting techniques are presently being used by the BLM when preparing timber sales.

- Tractor logging will be limited to slopes with average gradients of less than 40 percent.
- Roads will be constructed to the minimum standard necessary to remove the timber and protect the environment.
- Road locations will be based on topography, drainage, soils, and other natural features to minimize erosion.
- Skid trails will be water barred, as needed, to retard soil erosion.
- Streamside green strips will be left along perennial streams. Skidding through streams will not be allowed.
- Logging units will be laid out to minimize the risk of wind throw of leave trees. Selection of leave trees will be made to improve the genetic composition of the regenerated stand. Clearcut blocks will be less than 10 acres and shaped to resemble natural openings.
- All slash burning will be done in conformance with state air pollution regulations. If available, a minimum of three snags per acre plus replacement snags will be left for wildlife on all sales.

In addition to guidance found in the above documents, various aspects of the public domain forestry program are based upon the following federal and state laws and policy:

Federal Laws:

- Material Disposal Act (1947)

- NEPA (1969)
- FLPMA (1976)
- Water Quality Act (1987)
- Clean Air Act
- Public Law 80-291
- 42 USC 4321-47
 - 83 Stat. 852
 - Public Law 80-291
 - Public Law 91-190
- 43 USC 1701 et seq.
 - 90 Stat. 2743
 - Public Law 94 – 579

Federal Regulations:

- 43 CFR 5000 to 43 CFR 5511

Federal Policy:

- Public Domain Forest Management Policy (1989)
- Total Forest Management Initiative (June 1992)

The previous planning documents focused primarily on commodity extraction and associated, appropriate silvicultural and harvesting techniques such as:

- Utilization of commercial products to sustain/support private industry needs (versus nonutilization from prescribed burning)
- Firewood cutting
- Biomass utilization

The Healthy Forest Initiative (HFI), the Healthy Forest Restoration Act (HFRA), and stewardship contracting authority have placed a greater emphasis on managing for forest health rather than commodity extraction. Present management actions are based on forest health, in compliance with the Montana forest BMPs and Montana Stream Management laws.

SPECIAL DESIGNATIONS

3.2.21 Areas of Critical Environmental Concern (ACECs)

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	No ACECs designated within the planning area.	N/A.
<i>Judith Resource Area RMP</i>	Identifies four ACECs and specifies that activity plans will be prepared for each. Judith Mountains Scenic Area ACEC: scenic, wildlife, and recreational	Activity plans have not been drafted for any of the ACECs.

Decision Source	Current Management Decision/Policy	Status
	values in the Judith Mountains. Managed to mitigate impacts to resources from surface-disturbing activities. Off-road travel restricted yearlong to designated roads and trails. Avoidance area for ROWs. Available for restricted management of forest products. Open to mineral entry. Acid Shale-Pine Forest ACEC: a Research Natural Area with an endemic plant community unique to the area and a fragile watershed. Allow research at War Horse unit and maintain Briggs Coulee as a control site. Open to mineral entry; disposal of forest products from the area will be prohibited (unless necessary for stand preservation); receives intensive wildfire suppression; ORV use restricted yearlong to designated roads and trails. Square Butte ONA ACEC: established to protect natural endemic systems, cultural sites, scenic qualities, rare geologic features unique to Montana, and to identify key wildlife viewing sites under the Watchable Wildlife Program. Managed for wildlife, cultural resources, and recreation. Segregated from the mining and leasing laws by a classification under the authority of the Classification and Multiple-Use Act of 1964 (CMU). The BLM will pursue a protective withdrawal for Square Butte to segregate this area from mining claim location to protect natural endemic systems, cultural sites, scenic qualities, and rare geologic features unique to Montana. The classification will be terminated when the area is withdrawn. Legal access will be pursued to the ACEC for a trailhead as well as a trail network to the butte.	Land donation has expanded the public land component of the Square Butte ACEC. Legal access has not been obtained.

Decision Source	Current Management Decision/Policy	Status
	The area will be closed to off-road vehicles. Surface-disturbing activities will be prohibited, including transmission lines, roads, communication sites, pipelines, etc. Recreation and habitat direction for the area will include a trail system, camping areas, a recreation use policy, and habitat management direction for wildlife populations including prescribed fire, security areas, etc. The sale of forest products will be prohibited, unless necessary for stand preservation. Collar Gulch ACEC: established to protect a pure strain of westslope cutthroat trout, a MFWP state species of special concern. Emphasis is wildlife habitat protection and improvement for the westslope cutthroat trout population, with some nonmotorized recreational use. Area closed to motorized vehicles (except for the main Judith Peak Road and connected Big Grassy Peak and Crystal Peak/Collar Ridge access roads). Additional public access to the area will not be pursued to protect natural resource values. Initiate stream protection and enhancement structures. Initiate a study to identify the source of water quality degradation in the drainage, and develop appropriate measures to eliminate or mitigate the degrading source. The BLM will implement a nondegradation policy for the waters in Collar Gulch Creek to protect the resident population of westslope cutthroat trout. Variances will be provided for individual operations only after application of best reasonably available control technology, and only to the extent that it will not impact the trout population. The BLM will initiate a routine water quality	Road into Collar Gulch gated, minimizing motorized vehicle access, stream enhancement structures installed.

Decision Source	Current Management Decision/Policy	Status
	monitoring program in the drainage to establish baseline conditions. Withdrawal of surface or groundwater will be restricted when the flow in Collar Gulch Creek drops below 3 cfs measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4. Concurrent reclamation will be emphasized, thereby reducing erosion and sedimentation potential. Surface-disturbing activities will be designed to minimize impacts to the Collar Peak Trail. Surface-disturbing activities will be designed to avoid impact to the Tate-Poetter Cave resources.	

3.2.22 Back Country Byways

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	No mention of back country byways.	None identified in the area covered by the <i>Headwaters RMP</i> .
<i>Judith Resource Area RMP</i>	Recreation emphasis will be to develop and maintain opportunities for dispersed recreational activities such as . . . driving for pleasure. Methods to achieve these opportunities include . . . Back Country Byway programs (1992:22). Missouri Breaks National Back Country Byway proposed (1992:20). The Judith Peak/Maiden Canyon Road may be nominated to the Back Country Byways system (1992:20).	Missouri Breaks National Back Country Byway established. Not implemented.

3.2.23 National Trails

Current National Historic Trails Management Decisions

Congress established the Lewis and Clark National Historic Trail (NHT) in 1978 as one of the four original trails comprising the National Trails System.

Congress established the Nez Perce NHT in 1986.

The National Parks and Recreation Act of 1978 established the Continental Divide National Scenic Trail (CDNST).

In 2012, the BLM released new manual direction regarding National Scenic and Historic Trail Administration (BLM Manual 6250, dated July 13, 2012).

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	No mention of national historic or scenic trails.	The National Park Service (NPS) is updating their Comprehensive Management Plan (CMP) for the Lewis and Clark NHT. The BLM is providing input into the plan. The Nez Perce NHT is not present in this area. The CDNST is administered by the FS. The CDNST Comprehensive Plan was updated in 2009.
<i>Judith Resource Area RMP</i>	Identifies Nez Perce NHT as a recreation management area (RMA). 1. BLM will manage the recreation activities and opportunities associated with this portion of this historical feature. 2. The trail provides several opportunities for interpretation. Key segment begins near Winifred and enters the Upper Missouri National Wild and Scenic River Corridor. It also parallels portions of the Missouri Breaks National Back Country Byway. 3. Scenic and cultural values will be protected on BLM land along this historic trail. An activity plan will be developed to detail management activities along the trail. Does not address the Lewis and Clark NHT.	1. The Forest Service is updating the existing CMP (1990) for the Nez Perce NHT. The BLM is providing input into the plan. 2. The majority of the trail identified in the <i>Judith RMP</i> is located within the UMRBNM and was analyzed in that plan (2008). The portions of the Nez Perce NHT within the LFO are not within the "High Potential Route Segment." 3. The activity plan was not developed. The NPS is updating their CMP for the Lewis and Clark NHT. The BLM is providing input into the plan.

3.2.24 Wild and Scenic Rivers (WSRs)

In 2012, the BLM released new manual direction regarding wild and scenic rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management (BLM Manual 6400, dated July 13, 2012).

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	No mention of wild and scenic rivers.	No wild and scenic rivers within the planning area.
<i>Judith Resource Area RMP</i>	The BLM reviewed 39 rivers and streams within the planning area; none was found suitable.	No wild and scenic rivers within the planning area.

3.2.25 Wilderness Study Areas (WSAs)

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	North Fork Sun River WSA and Beaver Meadows WSA were not included in the <i>Final Headwaters RMP</i> . They were studied for their wilderness potential under the wilderness interim management policy based on litigation in 1986 (Watt lawsuit). On January 13, 1988, North Fork Sun River was found as unsuitable for wilderness designation. Beaver Meadows was also found as unsuitable for wilderness designation.	Both North Fork Sun River and Beaver Meadows are being managed as WSAs under Section 202.
<i>Montana Statewide Wilderness Study Report (Volume I)</i>	Both North Fork Sun River and Beaver Meadows are being managed as WSAs under Section 202. State Directors have authority, through the BLM land use planning process, to drop Section 202 areas from further wilderness considerations which are found to be unsuitable.	Both North Fork Sun River and Beaver Meadows are being managed as WSAs under Section 202.
<i>Judith Resource Area RMP</i>	A final suitability study/EIS was completed that recommended for nonwilderness designation was Square Butte.	The WSAs will continue to be managed under the BLM Interim Management Policy and Guidelines for Lands Under Wilderness Review until they are acted upon by Congress.

Decision Source	Current Management Decision/Policy	Status
<i>Montana Statewide Wilderness Study Report</i> (Volume I)	Square Butte was designated as an Instant Study Area (ISA) and the 1,947 acres were recommended for nonwilderness.	The BLM began the wilderness review in accordance with the requirements of Section 603(c) of FLPMA. Section 603(a) of FLPMA required the Secretary of the Interior to prepare wilderness suitability recommendations for all formally identified natural or primitive areas existing prior to November 1, 1975. These areas became known as ISAs. There has been no action in Congress on the omnibus ISA Bill since its introduction in 1985. Therefore, Montana has included the recommendations for Square Butte ISA as part of the statewide wilderness package. Thus, Square Butte will be managed as a WSA until acted upon by Congress.

3.2.26 Outstanding Natural Areas (ONAs)

A comprehensive list of the decisions currently in place from the ONA Activity Plan is included in Appendix I.

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i> (p. iv)	Four ONAs would be designated along the Rocky Mountain Front – Blind Horse Creek, Ear Mountain, Chute Mountain, and Deep Creek/Battle Creek. These four areas would be managed to protect wildlife habitat, scenery, and other surface resource values from disturbance.	Rocky Mountain Front ONAs managed under the Activity Plan EA (1989).

SOCIAL AND ECONOMIC

3.2.27 Social and Economic Conditions

Decision Source	Current Management Decision/Policy
<i>Headwaters Resource Area RMP</i> <i>Judith RMP</i>	Social and economic conditions were included primarily in the analysis; therefore, no decisions were made specific to Social and Economic Conditions.

3.2.28 Treaty Rights and Tribal Interests

No management decisions were issued in the *Headwaters Resource Area RMP* or *Judith RMP* that related specifically to tribal treaty rights.

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters Resource Area RMP</i>	No management decisions issued relating to Tribal Treaty Rights.	--
<i>Judith Resource Area RMP</i>	The BLM will consult with Native American tribes when its actions have the potential to affect areas of concern to the practitioners of traditional religions. The activities of concern are those which might cause degradation to the visual or aesthetic nature of an area, or cause the loss of plant species or other resources important to Native Americans. The BLM is required to consult with traditional religious practitioners of policies and procedures to determine if changes are needed to ensure that such rights and freedoms are not abridged by agency practices (1992:23). Those traditional cultural properties that are at least 50 years require consideration under the NHPA. The BLM will analyze each proposed action by determining the likelihood of the presence of not only significant cultural properties, but also the potential for or the presence of traditional cultural properties. Potential impacts to traditional cultural properties subject to the	The BLM consults with Native American tribes in these situations. No traditional cultural properties have been identified in the planning area.

Decision Source	Current Management Decision/Policy	Status
	NHPA and, therefore, determined eligible for the NRHP, will be avoided or, if possible, mitigated (1992:24).	

3.2.29 Environmental Justice

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i> <i>Judith RMP</i>	No management decisions issued relating to Environmental Justice.	--

3.2.30 Public Safety

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i> <i>Judith RMP</i>	No management decisions issued relating to Public Safety.	--

3.2.30.1 Abandoned Mine Lands

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i> <i>Judith RMP</i>	No management decisions issued relating to Abandoned Mine Lands.	--

3.2.30.2 Geological Hazards

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i> <i>Judith RMP</i>	No management decisions issued relating to Geological Hazards.	--

3.2.30.3 Hazardous Materials

Decision Source	Current Management Decision/Policy	Status
<i>Headwaters RMP</i>	No management decisions issued relating to Hazardous Materials from the <i>Headwaters RMP</i> .	--

Decision Source	Current Management Decision/Policy	Status
<i>Judith RMP</i>	The BLM will prevent the contamination of BLM land with hazardous substances and ensure public health and safety. No authorizations will be made for developing hazardous waste disposal or landfill facilities on BLM land. Implementation Land requested for hazardous waste disposal sites, treatment facilities, or landfills would be transferred to private ownership, through sale or exchange, after appropriate environmental review. Such action would be coordinated with the Montana Department of Health and Environmental Sciences, Solid and Hazardous Waste Bureau. All land acquired by the BLM, through purchase or exchange, shall be inventoried for hazardous substances and past history of possible contamination in accordance with Secretarial Order 3 127. The BLM will not take title to any land known to be contaminated with hazardous substances. Processing land and mineral authorizations shall include review for the proper use, control, storage, and disposal of hazardous materials. A contingency plan will be prepared to direct and coordinate a BLM response to any reported incident involving the spill or release of potentially hazardous substances on BLM land.	

CHAPTER 4

MANAGEMENT OPPORTUNITIES

4.0 MANAGEMENT OPPORTUNITIES/MANAGEMENT ADEQUACY

This chapter analyzes the ability of current management direction to achieve desired conditions and address resources and demands for use of the resources. It describes resource management activities that may or may not, under current management, be meeting the goals specified in the resource management plan (RMP). This chapter serves as a starting point for alternative formulation by identifying management opportunities for consideration during the alternative development process.

4.1 DESIRED CONDITIONS AND ABILITY TO MEET RESOURCE DEMANDS

Management decisions from the *Headwaters RMP*, the *Judith RMP*, and other sources are identified in the following tables. Each decision is analyzed for responsiveness to current needs and opportunities for management changes. Each decision is identified by program area.

RESOURCES

4.1.1 Air Resources and Climate Change

The *Headwaters* and *Judith-Valley-Phillips (JVP) RMPs* did not specifically identify “Air Resources and Climate Change” direction or management objectives. These resources will be analyzed in the upcoming RMP, as described in the table below.

Options for Change
The upcoming RMP Revision provides opportunities to analyze air resource impacts associated with future planning area activities. Modeling will be performed to assess potential air resource impacts from Bureau of Land Management (BLM)-authorized activities on ambient pollutant concentrations, and on visibility and deposition at sensitive areas. With regard to climate change, management decisions will be reviewed to identify technically and economically feasible atmospheric greenhouse gas (GHG) emission reduction or sequestration strategies beyond those already implemented as best management practices (BMPs).
Air resource issues and management concerns include air quality and climate change. Due to the expectation that ambient concentrations of criteria air pollutants will remain below the Montana Ambient Air Quality Standards (MAAQS) and the National Ambient Air Quality Standards (NAAQS), the primary air resource concern is preserving and improving visibility at Federal Class I areas near the planning area. Deposition is a secondary concern because most high altitude areas, which are more susceptible to deposition impacts, are located upwind of the planning area.
Climate change is a management concern due to climate impacts being experienced throughout the planning area on a wide variety of resources. Per United States (US) Department of the Interior (DOI) Secretarial Order No. 3226, Amendment No. 1, the BLM is to “consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, and/or when making major decisions affecting DOI resources.”

4.1.2 Geology

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The BLM will provide for access and study of unique geological features. This includes examples of unique structure, stratigraphy, mineral assemblages, historical geology, geomorphology, or other geologic exposures that may be educationally valuable or scientifically significant. The BLM may develop interpretative sites for geologic features.	No	Decision for public outreach and educational interpretation.	Geologic features could be identified through planning and, if special designations aren't warranted, interpretive sites could be established.

4.1.3 Soil Resources

Planning Decision	Remarks (Rationale)	Options for Change
The BLM will maintain and/or improve soil productivity by increasing vegetation cover and reducing erosion.	The soil stipulations need to better define what is acceptable for occupancy on such special areas slopes. This could be accomplished with much more definitive exceptions, modifications, and waivers.	The following are potential management opportunities that may result in a change in desired future conditions or a change in management policy related to soil resources: - Continue to focus management on maintenance of soil integrity, successful reclamation, and erosion control and reduction on all soil types by implementing mitigation measures and BMPs, relocating activities to areas having more suitable soil types, or denying activities in areas where soil impacts cannot be mitigated or effectively controlled. - Address protection of soils to reflect the expected future uses and conditions of BLM-administered lands. Some soil stipulations may need to be accordingly clarified or changed.

Planning Decision	Remarks (Rationale)	Options for Change
		• Specific emphasis should be placed on managing surface-disturbing activities in areas identified as having soils that are particularly susceptible to erosion and have very low or low reclamation potential. • Consider ways to minimize surface disturbance and improve/speed reclamation. • Identify areas where accelerated soil erosion from roads/trails is a concern, and develop plans and schedules for mitigation and/or maintenance. • Provide guidance for emergency soil stabilization and rehabilitation after wildland fires. • Continue and improve public education on travel restrictions and off-highway vehicle (OHV) use. • Collaborate with federal, state, and local agencies for continued development and implementation of BMPs and other rehabilitation techniques for existing conditions and future activities.

4.1.4 Water Resources

4.1.4.1 Groundwater Resources

This section analyzes the ability of current management direction of groundwater resources to achieve desired resource conditions. The first section evaluates the adequacy of the current management decisions and offers options for change. The second section weighs the forecast management issues for water resources and identifies key features to guide land uses and management, given the resource demands.

Ability of Current Management Direction to Achieve Desired Conditions

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Surface and groundwater quality will be maintained to meet or exceed state and federal water quality standards.	Yes	Meeting state and federal water quality standards is a requirement of uses on BLM-administered lands.	No need for change.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The BLM will continue obtaining water rights for all projects on BLM land and complying with Montana water laws.	Yes	Complying with Montana water laws is BLM policy.	No need for change.
Small amounts of oilfield-produced water, which do not meet water quality standards, will be disposed of in accordance with Onshore Order #7 and/or Environmental Protection Agency (EPA) guidelines.	Partly	Regardless of the relative quality of produced water, produced water should be disposed of in accordance with Onshore Order #7 and/or EPA guidelines.	Decision should be changed to produced water will be disposed of in accordance with Onshore Order #7 and/or EPA guidelines.
Withdrawal of surface or groundwater will be restricted when the flow in Collar Gulch Creek drops below 3 cubic feet per second (cfs) measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4.	Partly	The State of Montana is responsible for permitting water appropriations. The appropriateness of BLM authorizing a right-of-way (ROW) for a withdrawal of water in habitat for a species of special concern should be evaluated.	Remove decision. Consider not authorizing withdrawal of water in sensitive aquatic habitat.
Water quality will be maintained or improved in accordance with state and federal standards, including consultation with state agencies on proposed projects that may significantly affect water quality.	Yes	Meeting state and federal water quality standards is a requirement of uses on BLM-administered lands.	No need for change.
Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #3: Water quality meets Montana State standards.	Yes	Meeting water quality standards is a requirement of the uses of BLM-administered lands.	No option for change. A land use plan (LUP) does not have the authority to change the Standards for Rangeland Health.
All produced water from federal/Indian leases must be disposed of by (1)	Yes	All produced water from federal/Indian leases must be disposed of in	No need for change.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
injection into the substance; (2) into pits; or (3) other acceptable methods approved by the authorized officer, including surface discharge under National Pollution Discharge Elimination System (NPDES) permit.		accordance with Onshore Order #7.	

Management Issues and Areas of Relative Ecological Importance to Guide Land Uses and Management

In the Northwestern Great Plains and the Middle Rockies Ecological Regions, change agents that are forecast to potentially affect water resources include urban/suburban development/vacation homes, climate change/drought, sodbusting/agricultural intensification, nonnative species invasions, groundwater withdrawals and drawdown, surface water diversion, and saline/nutrient/and other discharges associated with energy development, agriculture, and mining (Rapid Ecoregional Assessment [REA] Memo 1).

Groundwater resource features that could guide land use allocation or management decisions include:

- Source water protection areas for public water supplies (in particular, those public water supplies developed in surficial aquifers);
- Important groundwater features such as Giant Spring and Big Spring;
- Recharge areas for important aquifers such as the Madison;
- Floodplains and quaternary alluvium of modern-day channels and riparian-wetland areas.

Oil and gas stipulations for protection of groundwater resources should be changed for consistency with neighboring RMPs unless there is a specific resource issue that requires different protections. Similar types of protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry. In particular, protections should be developed for the key groundwater resource features.

4.1.4.2 Surface Water Resources

This section analyzes the ability of current management direction of surface water resources to achieve desired resource conditions. The first section evaluates the adequacy of the current management decisions and offers options for change. The second section weighs the forecast management issues for water resources and identifies key features to guide land uses and management given the resource demands.

Ability of Current Management Direction to Achieve Desired Conditions

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Surface and groundwater quality will be maintained to meet or exceed state and federal water quality standards.	Yes	Meeting state and federal water quality standards is a requirement of uses on BLM-administered lands.	No need for change.
The BLM will continue obtaining water rights for all projects on BLM land and complying with Montana water laws.	Yes	Complying with Montana water laws is BLM policy.	No need for change.
The BLM will improve or maintain vegetative cover on upland and riparian-wetlands to reduce runoff and sedimentation, especially on highly erodible soils.	No	Standards for Rangeland Health have replaced the need for this decision. The decision is also not appropriate for certain wildlife habitat and disturbance-driven ecosystems.	Remove decision.
Reservoirs will be designed with a minimum 15-year life expectancy.	No	This decision is more applicable to facilities management than the management of water resources.	Remove decision or move to facilities management.
The BMPs will be implemented to protect watershed values and maintain or improve water quality.	Yes	The BMPs are important for protecting water quality.	No need for change.
Small amounts of oilfield-produced water, which do not meet water quality standards, will be disposed of in accordance with Onshore Order #7 and/or EPA guidelines.	Partly	Regardless of the relative quality of produced water, produced water should be disposed of in accordance with Onshore Order #7 and/or EPA guidelines.	Decision should be changed to produced water will be disposed of in accordance with Onshore Order #7 and/or EPA guidelines.
Streamside green strips will be left along perennial streams. Skidding through streams will not be allowed.	No	Montana Streamside Management Zone (SMZ) laws have replaced the need for this decision.	Montana SMZ laws are more protective than the existing decision. Consider adopting SMZ laws into the RMP. Consider adopting the riparian management

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
			zone criteria and management direction for consistency with the <i>Butte</i> and <i>Missoula</i> <i>RMPs</i> .
Clearcut blocks will be less than 10 acres and shaped to resemble natural openings.	No	Clearcut size in itself is not a particularly useful indicator of the effects to watershed condition.	Remove decision.
The BLM will initiate a study to identify the source of water quality degradation in the drainage (Collar Gulch) and develop appropriate measures to eliminate or mitigate the degrading source.	Partly	Collar Gulch is still a water quality-impaired stream because of metal concentrations as well as habitat to westslope cutthroat trout.	No need for change.
The BLM will implement a nondegradation policy for the waters in Collar Gulch Creek to protect the resident population of westslope cutthroat trout.	No	All waters in the State of Montana have a nondegradation policy intended to maintain water quality parameters necessary to support existing uses.	Remove decision.
The BLM will initiate a routine water quality monitoring program in the drainage (Collar Gulch) to establish baseline conditions.	Yes	Collar Gulch is still a water quality- impaired stream because of metal concentrations as well as habitat to westslope cutthroat trout.	No need for change.
Withdrawal of surface or groundwater will be restricted when the flow in Collar Gulch Creek drops below 3 cfs measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4.	Partly	The State of Montana is responsible for permitting water appropriations. The appropriateness of BLM authorizing a ROW for a withdrawal of water in habitat for a species of special concern should be evaluated.	Remove decision. Consider not authorizing withdrawal of water in sensitive aquatic habitat.
Concurrent reclamation will be emphasized, thereby reducing erosion and sedimentation potential.	Yes	Temporary and short-duration road construction is an effective method for mitigating long-term effects.	Consider defining timing, duration, and reclamation requirements.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Soil, water, and air resources will continue to be evaluated on a case-by-case basis as part of project level planning. Such an evaluation will consider the significance of the proposed project and the sensitivity of soil, water, and air resources in the affected area.	Yes	Specific BMPs and mitigation measures are often necessary at the project level to protect water resources.	No need for change.
Water quality will be maintained or improved in accordance with state and federal standards, including consultation with state agencies on proposed projects that may significantly affect water quality.	Yes	Meeting state and federal water quality standards is a requirement of uses on BLM-administered lands.	No need for change.
Management actions on public land within municipal watersheds will be designed to protect water quality and quantity.	Partly	Source water protection areas (SWPAs) have been delineated by the Montana Department of Environmental Quality (MDEQ). These areas are key features and require special protections.	Oil and gas stipulations for protection of SWPAs should be changed for consistency with neighboring RMPs, unless there is a specific resource issue that requires different protections. Similar protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.
Management activities in riparian zones will be designed to maintain or improve riparian habitat condition.	Partly	Management activities allowed in riparian zones should be defined. Protections similar to the oil and gas stipulations should be developed for other	Protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.	transportation management, lands and realty, and forestry.
Roads and utility corridors will avoid riparian zones to the extent practicable.	Partly	Management activities allowed in riparian zones should be defined. Protections similar to the oil and gas stipulations should be developed for other programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.	Protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.
Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #2: Riparian and wetland areas are in proper functioning condition.	Yes	The proper functioning condition of riparian-wetland areas is the minimum condition necessary to sustain functionality of these areas.	No option for change. An LUP does not have the authority to change Standards for Rangeland Health.
Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #3: Water quality meets Montana State standards.	Yes	Meeting water quality standards is a requirement of the uses of BLM-administered lands.	No option for change. An LUP does not have the authority to change Standards for Rangeland Health.
Oil and gas lease stipulations: any surface use or occupancy will be strictly controlled or, if absolutely necessary, excluded from special areas. Special areas may	Partly	The features to be protected are appropriate, but the requirements are inconsistent with neighboring RMPs' oil and gas stipulations. More scientifically-based buffer	Stipulations for protection of water resources should be changed for consistency with neighboring RMPs unless there is a specific resource issue that

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
include: 500 feet or, when necessary, within the 25-year floodplain from reservoirs, lakes, and ponds and intermittent, ephemeral or small perennial streams; 1,000 feet or, when necessary, within the 100-year floodplain from larger perennial streams, rivers, and domestic water supplies.		distances are now available. Also, stipulations do not apply to other resource use programs.	requires different protections. Similar protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.
Each agency shall provide leadership and shall take action to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation, and licensing activities.	Yes	The natural and beneficial value of floodplains is as important currently as it was at the time of establishment of Executive Order 11988: Floodplain Management	No option for change. An LUP does not have the authority to change an executive order.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Each agency shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation, and licensing activities.	Yes	The natural and beneficial value of wetlands is as important currently as it was at the time of establishment of Executive Order 11990: Protection of Wetlands.	No option for change. An LUP does not have the authority to change an executive order.
All produced water from federal/Indian leases must be disposed of by (1) injection into the substance; (2) into pits; or (3) other acceptable methods approved by the authorized officer, including surface discharge under NPDES permit.	Yes	All produced water from federal/Indian leases must be disposed of in accordance with Onshore Order #7.	No need for change.

Management Issues and Areas of Relative Ecological Importance to Guide Land Uses and Management

In the Northwestern Great Plains and the Middle Rockies Ecological Regions, change agents that are forecast to potentially affect water resources include urban/suburban development/vacation homes, climate change/drought, sodbusting/agricultural intensification, nonnative species invasions, groundwater withdrawals and drawdown, surface water diversion, and saline/nutrient/and other discharges associated with energy development, agriculture, and mining (REA Memo 1). Those streams within the planning area that are not meeting the Standards for Rangeland Health because of livestock grazing are also a management issue.

Water resource features that could guide land use allocation or management decisions include:

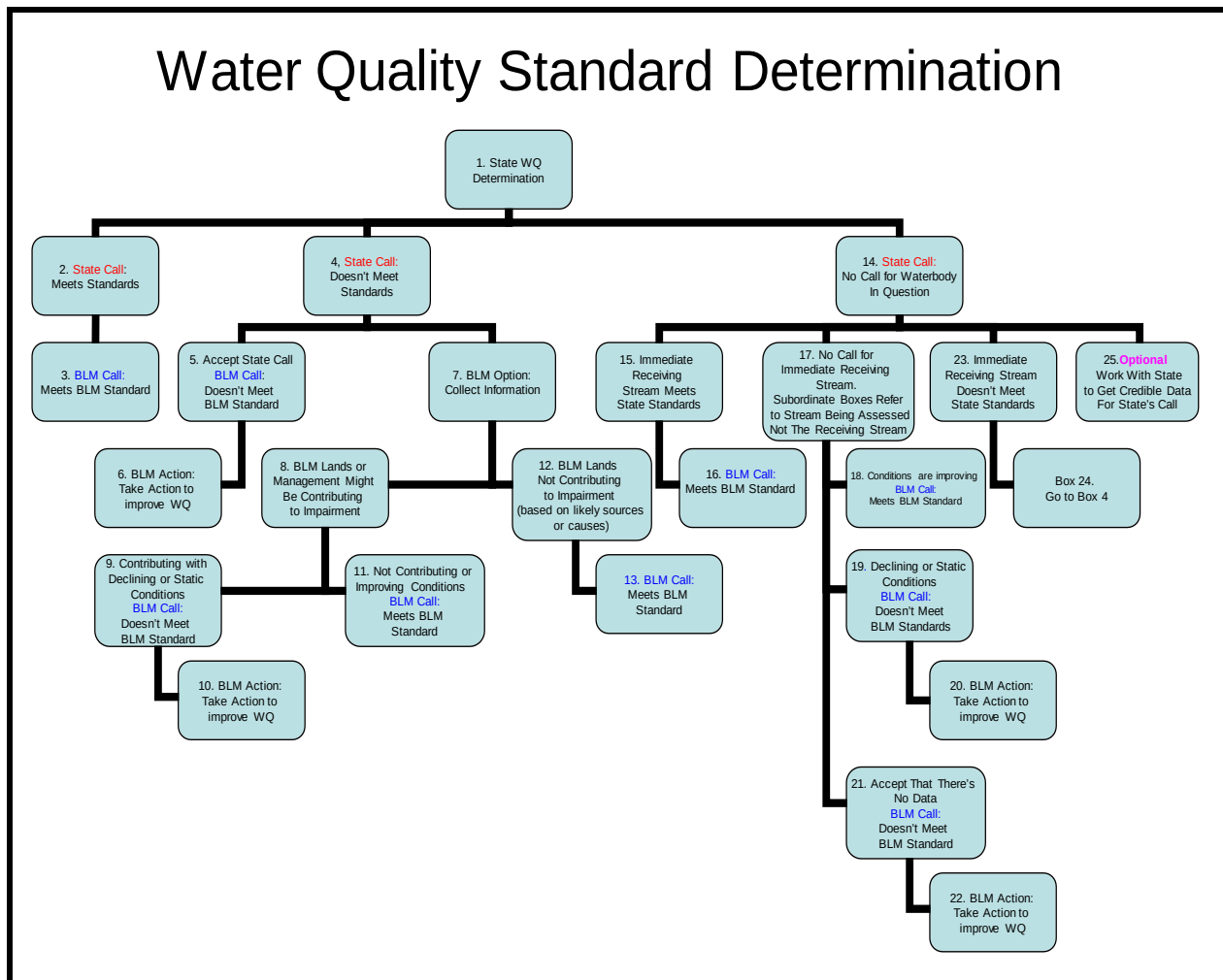
- Source water protection areas for public water supplies;
- Water quality- impaired streams;
- Those water bodies with uses that include sensitive aquatic life (e.g., special status species such as westslope cutthroat trout, Collar Gulch Area of Critical Environmental Concern (ACEC), etc.);
- Floodplains (i.e., Federal Emergency Management Agency (FEMA)-designated and 100-year floodplains), and riparian-wetland areas.

Oil and gas stipulations for protection of water resources should be changed for consistency with neighboring RMPs unless there is a specific resource issue that requires different protections. Similar types of protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry. In particular, protections should be developed for the key water resource features.

Standards for Rangeland Health have been implemented and Lewistown Standard #3 requires achieving or making significant progress toward meeting State of Montana water quality standards. Those areas that were not meeting standards because of management activities that are in control of the BLM, such as livestock grazing, have had management actions implemented to address areas in a static or downward trend. It would be reasonable to assume that many of these actions would be making progress toward improving conditions, but the relative success of these actions is unknown at this time. Improvements in livestock grazing management in upland and riparian-wetland areas will be necessary over the life of this plan. The process for renewing grazing permits and improving management on water quality-impaired streams should be identified in the plan and prioritized. Figure 4-1 illustrates the process for determining whether BLM lands are meeting the requirements of Lewistown Standard #3.

Figure 4-1

Montana/Dakotas Process for Determination of Water Quality Standard



4.1.5 Vegetative Communities

4.1.5.1 Rangelands

Ability of Current Management Direction to Achieve Desired Conditions

The revised RMP should establish more specific and measurable objectives for vegetation resources that are based on desired vegetative condition, composition, cover, and seral stages.

The *Headwaters* and *Judith-Valley-Phillips (JVP)* RMPs did not specifically identify “Vegetative Communities” direction or management objectives. Instead, they identified grazing management direction and management objectives to improve range condition over the short and long term. Various methods that would be implemented included multiple vegetation treatments and the revision of certain existing plans. Numerous structural improvements such as reservoirs, spring developments, wells, and pipelines were proposed over the course of the plans. Nonstructural improvements such as seeding, spraying, and burning were also proposed to improve range conditions in the short and long term.

Areas of Relative Ecological Importance to Guide Land Uses and Management

Areas of particular ecological importance provide habitat for federally-listed or BLM sensitive species. There are vegetative communities or associations that are rare or outstanding examples of these habitat types.

4.1.5.2 Forest/Woodlands

Ability of Current Management Direction to Achieve Desired Conditions

While the BLM continues to manage forests on public lands under the principles of multiple use and sustained yield as required by the Federal Land Policy and Management Act of 1976 (FLPMA), these principles have taken on a different interpretation from when the *Headwaters* and *JVP RMPs* were released. The forest management sections of the *Headwaters RMP* (BLM, 1984) and the *JVP RMP* (BLM, 1994) focus on the sustained-yield component, which was the emphasis at that time. While the concept of sustained yield is still an important component of the forestry program, there is more emphasis placed on managing forest health and fuels reduction for the benefit of all resources. This type of management results in restoring forests to some form of desired future condition with a future range of variability, with timber production being a by-product. As a result, this current planning effort needs to include decisions that address this new emphasis in forest and woodland management.

Issues and Management Concerns

Issues and management concerns of forests and woodlands throughout the planning area are focused on Water Quality & Quantity; Declining Forest Health; and Ecosystem Management. Additional topics related to Woodlands/Forests Issues and Challenges can be found in *Forests: Our Growing Legacy Report* (1993).

The BLM has the objective to provide a desired plant community that supports the integrity of the ecological processes provided by the vegetative community. Issues related to this objective include:

- Restoration of landscapes to achieve Historical Range of Variability conditions (Fire Condition Class I). What are Desired Future Conditions (DFCs) for forested lands, on a landscape and project area? Structures and levels of each structure to be maintained on the landscape need defined.
- Time frame to achieve DFC? Sustainable harvest versus quick restoration of landscapes to reduce fuels and lethal fire effects?
- Access - How does the BLM manage forested lands when a majority of the lands are only accessible through private land?

The forests and woodlands in the RMP planning area have become overstocked and decadent, much of which is due to the lack of management, exclusion of fire, and extended drought. Forests and woodlands are becoming more susceptible to insect invasion and disease infestation. Direction for forest and woodland management should focus on changing objectives and actions to reflect the desired plant communities.

There are no current management decisions that consider the conservation of aspen and other hardwoods. These areas need management to restore, maintain, or enhance plant communities to a future range of variability, including riparian areas. Management prescriptions should be designed to reduce or remove vegetation from sites where it has encroached and to expand aspen stands in all locations where it is found.

Also, no current management decisions consider the conservation of whitebark and limber pine. These species' current decline is due to the combined effects of mountain pine beetle outbreaks, fire exclusion policies, and the spread of the exotic fungus, white pine blister rust. Future management decisions with regard to five-needle pines must be appropriately evaluated to ensure the long-term objective of maintaining these sensitive species throughout the planning area.

4.1.5.3 Riparian-Wetland Communities

This section analyzes the ability of current management direction of riparian and wetland areas to achieve desired resource conditions. The first section evaluates the adequacy of the current management decisions and offers options for change. The second section weighs the forecast management issues for riparian-wetland areas and identifies areas of relative ecological importance to guide land uses and management given the resource demands.

Ability of Current Management Direction to Achieve Desired Conditions

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Each agency shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation,	Yes	The natural and beneficial value of wetlands is as important currently as it was at the time of establishment of Executive Order 11990: Protection of Wetlands.	No option for change. An LUP does not have the authority to change an executive order.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
and licensing activities.			
Each agency shall provide leadership and shall take action to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for the following actions: • Acquiring, managing, and disposing of federal lands and facilities; • Providing federally-undertaken, financed, or assisted construction and improvements; • Conducting federal activities and programs affecting land use including, but not limited to, water and related land resources planning, regulation, and licensing activities.	Yes	The natural and beneficial value of floodplains is as important currently as it was at the time of establishment of Executive Order 11988: Floodplain Management.	No option for change. An LUP not have the authority to change an EO.
Achieving or making significant and measurable progress towards these functions and conditions is required of all uses of public rangelands. Lewistown Standard #2: Riparian and wetland areas are in proper functioning condition.	Yes	The proper functioning condition of riparian-wetland areas is the minimum condition necessary to sustain functionality of these areas.	No option for change. An LUP does not have the authority to change Standards for Rangeland Health.
Oil and gas lease stipulations: any surface use or occupancy will be	Partly	The features to be protected are appropriate, but the requirements are	Stipulations for protection of riparian-wetland areas should be

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
strictly controlled or, if absolutely necessary, excluded from special areas. Special areas may include: 500 feet, or when necessary, within the 25-year floodplain from reservoirs, lakes, and ponds and intermittent, ephemeral, or small perennial streams; 1,000 feet, or when necessary, within the 100-year floodplain from larger perennial streams, rivers, and domestic water supplies.		inconsistent with neighboring RMPs' oil and gas stipulations. More scientifically-based buffer distances are now available. Also, stipulations do not apply to other resource use programs.	changed for consistency with neighboring RMPs, unless there is a specific resource issue that requires different protections. Similar protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.
The BLM will improve or maintain vegetative cover on upland and riparian-wetlands to reduce runoff and sedimentation, especially on highly erodible soils.	No	Standards for Rangeland Health have replaced the need for this decision. The decision is also not appropriate for certain wildlife habitat and disturbance-driven ecosystems.	Remove decision.
The BLM will maintain and/or improve the riparian-wetland areas in existing, proposed, and potential allotment management plans (AMPs) along with wetlands in non-AMP areas based on proper functioning condition and desired plant community.	Partly	The Lewistown Field Office manages livestock grazing on riparian-wetland areas through the grazing permit renewal process.	An integrated riparian management process should be incorporated into all grazing permit renewal plans. The grazing permit renewal plans should be delineated and prioritized for implementing the riparian management process.
The first objective will be to improve or maintain riparian-wetland areas to proper functioning condition. The second objective will be to achieve or maintain the desired	Partly	Sometimes conditions above proper functioning condition (PFC) are necessary to achieve specific resource conditions such as wildlife habitat requirements, etc.	The portion of the decision to increase waterfowl habitat by 30 percent is no longer relevant. This decision does not consider whether increasing

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
plant community to provide wildlife habitat, increase waterfowl habitat by 30 percent, improve watershed conditions, and to comply with the nonpoint source water pollution section of the Clean Water Act.		Consideration of riparian-wetland value is part of the integrated riparian management process. However, increasing waterfowl habitat by 30 percent is an arbitrary objective and does not consider site potential and capability.	waterfowl habitat by 30 percent is feasible, and thus should be removed.
The BLM will initially accomplish riparian-wetland objectives through livestock grazing methods at current stocking levels. If grazing methods are not successful in meeting management objectives, the BLM will take the necessary action to achieve those objectives. This could include, but is not limited to, fencing riparian-wetland areas, reducing livestock numbers and use, and rehabilitating degraded riparian-wetland areas.	Yes	It is a rare scenario that reducing livestock numbers fixes a riparian-wetland grazing problem. More often than not, it is a timing, duration, or intensity issue. However, reducing livestock numbers should not be removed from the methods to fix riparian-wetland grazing problems, if needed.	No need for change.
To accomplish the riparian-wetland objectives, the BLM will consider the importance of the intermingled, private lands, including valuable riparian-wetland areas, which could be adversely impacted as a result of management changes on BLM land.	Yes	Given the scattered land ownership patterns of BLM-administered lands in the Lewistown Field Office (LFO), management changes on BLM-administered lands could affect adjacent riparian-wetland areas on private lands.	No need for change.
After riparian-wetland objectives are met, the BLM will allocate any forage increases within riparian-wetland areas to watershed, wildlife, and livestock.	No	Decision is too general to be relevant.	Remove decision.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
As new AMPs are written, existing AMPs revised, or through monitoring, specific objectives consistent with the plant community types described by the Montana Riparian Association will be developed. The objectives will include two aspects: proper functioning condition and desired plant community.	Partly	The Lewistown Field Office manages livestock grazing on riparian-wetland areas through the grazing permit renewal process.	An integrated riparian management process should be incorporated into all grazing permit renewal plans. The grazing permit renewal plans should be delineated and prioritized for implementing the riparian management process.
The proper functioning condition objective will include the following statement: "Sufficient plant residue would be left in the primary floodplain to protect streambanks during runoff events and provide for adequate sediment filtering and dissipation of flood water energy." Grazing methods will be designed to protect streambanks from unacceptable shearing and trampling.	No	The required statement is not even an objective.	Remove decision.
To achieve the PFC objective, more specific utilization standards may be incorporated into AMPs. Utilization standards will be based on key species to ensure grazing use is consistent with other resource values and objectives including water quality, recreation, and wildlife.	No	Use levels are triggers for livestock movement and they should not be used as standards for condition of resources. They also do not indicate whether or not a desired resource condition is being met.	Either remove the decision or clarify the appropriate role and use of utilization indicators.
Grazing methods to be implemented include, but are not limited to:	Yes	The grazing methods described are appropriate tools for managing livestock	No need for change.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
1. Hot season grazing deferment; 2. Creation of separate riparian pastures; 3. Changes in kind and class of livestock; 4. Time control grazing; and 5. Other range management practices such as development of offsite water, salting, developing shade sources, herding, insect control, or early use pastures. a. All spring developments will be fenced, if needed, to protect associated riparian-wetland vegetation. b. Salt and mineral blocks and supplemental feeding will only be allowed at least ¼ mile or further from riparian-wetland areas, where possible. c. Water developments will be built away from stream riparian-wetland areas, where possible. d. Study exclosures will be put in place on key areas and areas representative of		grazing in riparian-wetland areas.	

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
common riparian-wetland types and types about which there are questions, to compare management progress, demonstrate the values of proper management, and confirm potential and recovery rates. This will be a cooperative effort with permittees or lessees.			
Seeding, planting, and installing rock gabions and/or check dams may be used to meet riparian objectives in addition to grazing methods.	Partly	Stream channel restoration and bioengineering techniques have proven more successful than installing rock gabions and/or check dams in restoring stream channel and riparian conditions.	Rock gabions and/or check dams should rarely be used, and primarily only as a last resort, if necessary, to maintain a facility such as a road or crossing next to a stream.
The BLM will implement livestock grazing formulas to maintain or improve waterfowl nesting cover on allotments with existing or potential waterfowl production areas.	No	Management of waterfowl production areas should not be included in riparian-wetland area management.	Remove the decision from management of riparian-wetland areas.
To improve waterfowl production, the BLM will construct six to eight satellite water bodies of 2 to 3 surface acres within 1.5 miles of existing perennial water bodies greater than 10 surface acres. The BLM will also construct perennial water bodies (40 percent of which must be at least 3	No	Decision is related to waterfowl production rather than the management of riparian-wetland areas. The decision is also an environmentally irresponsible use of water.	Remove the decision.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
feet deep) within 1.5 miles of an existing cluster (four to five) of satellite water bodies.			
The BLM may fence specific, existing and new waterfowl and fishing reservoirs to establish or protect shoreline vegetation for a perimeter of a minimum of 100 feet around the high water line. Periodic, short-term grazing of fenced enclosure may be allowed, if necessary, to maintain or improve wetland habitat.	Partly	Fencing may be a tool to meet riparian-wetland resource objectives, but this decision is more relevant to sport fishery management than the management of riparian-wetland areas.	This decision should also be considered in sport fishery management as well.
The BLM will comply with all requirements for any insecticide or herbicide use within the wetlands complex (aquatic and terrestrial habitat).	Yes	Noxious weeds and invasive species are serious threats to riparian-wetland areas.	No need for change.
Land treatments and prescribed fire will not be allowed except as required for wildlife habitat management objectives.	Yes	Many riparian-wetland areas are disturbance-driven ecosystems. While flooding is generally the dominant driver of disturbance, some riparian species respond vigorously to fire.	No need for change.
Mechanical land treatments may be implemented on soil subgroups 1, 2, 10, and 11, containing predominantly blue grama and clubmoss vegetation, to improve waterfowl nesting cover.	No	Decision is related to waterfowl production rather than the management of riparian-wetland areas.	Remove the decision from management of riparian-wetland areas. Decision is related to waterfowl production.
Management activities in riparian zones will be designed to maintain or improve riparian habitat condition.	Partly	Management activities allowed in riparian zones should be defined. Protections similar to the oil and gas stipulations should be developed for other	Protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.	transportation management, lands and realty, and forestry.
Roads and utility corridors will avoid riparian zones to the extent practicable.	Partly	Management activities allowed in riparian zones should be defined. Protections similar to the oil and gas stipulations should be developed for other programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.	Protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry.
Management actions within floodplains and wetlands will include measures to preserve, protect, and, if necessary, restore their natural functions (as required by Executive Orders 11988 and 11990).	Yes	The natural and beneficial value of wetlands and floodplains is as important currently as it was at the time of establishment of Executive Order 11990: Protection of Wetlands and Executive Order 11988: Floodplain Management.	No option for change. An LUP does not have the authority to change an executive order.
Management techniques will be used to minimize the degradation of streambanks and the loss of riparian vegetation.	No	Standards for Rangeland Health have replaced the need for this decision.	Remove decision.
Riparian habitat needs will be taken into consideration in developing livestock grazing systems and pasture designs.	Partly	The LFO manages livestock grazing on riparian-wetland areas through the grazing permit renewal process.	An integrated riparian management process should be incorporated into all grazing permit renewal plans. The grazing permit renewal plans should be delineated and prioritized for implementing the riparian management process.

Management Issues and Areas of Relative Ecological Importance to Guide Land Uses and Management

Riparian-wetland areas are dependent upon the presence of water. In the Northwestern Great Plains and the Middle Rockies Ecological Regions, change agents that are forecast to potentially affect water resources include urban/suburban development/vacation homes, climate change/drought, sodbusting/agricultural intensification, nonnative species invasions, groundwater withdrawals and drawdown, surface water diversion, and saline/nutrient/and other discharges associated with energy development, agriculture, and mining (REA Memo 1). Changes to the quantity and quality of water resources indirectly affect the condition of riparian-wetland areas. Those riparian-wetland areas within the planning area that are not meeting Standards for Rangeland Health because of livestock grazing are also a management issue.

Riparian-wetland features that could guide land use allocation or management decisions include:

- Riparian-wetland areas in important wildlife habitats such as Greater-sage Grouse habitat or those streams on the Rocky Mountain Front;
- Riparian woodland forests such as cottonwood gallery forests;
- Riparian-wetland areas that provide habitat for sensitive aquatic life (e.g., special status species such as westslope cutthroat trout, etc.) or buffers around water quality-impaired streams;
- Floodplains (i.e., FEMA-designated and 100-year floodplains); and
- Quaternary alluvium of modern day channels.

Oil and gas stipulations for protection of riparian-wetland areas should be changed for consistency with neighboring RMPs unless there is a specific resource issue that requires different protections. Similar types of protections should be developed for other resource programs such as minerals, recreation and visitor services, travel and transportation management, lands and realty, and forestry. In particular, protections should be developed for the key riparian-wetland features.

Standards for Rangeland Health have been implemented, and Lewistown Standard #2 requires achieving or making significant progress toward the condition of PFC. Those areas that were not meeting standards because of management activities that are in control of the BLM, such as livestock grazing, have had management actions implemented to address those riparian-wetland areas in a static or downward trend. It would be reasonable to assume that many of these actions would be making progress toward improving conditions, but the relative success of these actions is unknown at this time. Improvements in livestock grazing management in riparian-wetland areas will be necessary over the life of this plan. The process for renewing grazing permits and improving management on riparian-wetland areas should be identified in the plan and prioritized. The integrated riparian management process should be followed for livestock grazing management in riparian-wetland areas in grazing permit renewal plans.

4.1.5.4 Special Status Species (Plants)

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
<i>Headwaters RMP</i> <i>Judith RMP</i>	No	Management of special status plants (SSP) is not discussed in these plans.	Objectives and management actions for SSP need to be spelled out in the RMP to meet the requirements of Appendix C of the LUP Handbook.

4.1.5.5 Invasive Plants

Ability of Current Management Direction to Achieve Desired Conditions

Currently, the one staff member who is responsible for noxious weed management also has other program duties assigned. Other LFO staff members also help with inventory and some weed management. A proactive weed management program utilizing the principles of integrated weed management (IWM) is anticipated to continue which will include weed inventory, coordinated efforts for weed control, monitoring effectiveness of treatments, implementation of cooperative range improvement agreements with affected permittees/lessees, development of partnerships with county weed departments, leveraging federal funds via grant applications, and educating the public. Funding for mitigation and control of invasive plants should be incorporated into project planning for each subactivity that may contribute to the introduction and spread of invasive plants or benefit from invasive plant management. Table 4-1 illustrates recommended preventative measures. Appendix L contains BLM's current standard treatment applications. The standard treatment procedures are followed in accordance with existing Bureau policy, guidance, and law. These procedures will be incorporated into planning criteria for development of the RMP. The plan cannot change these requirements; however, if conditions warrant, LFO could require more stringent procedures.

Management opportunities for noxious weeds and invasive plants include the following:

Planning Decision	Is Decision Responsive to Current Issues?	Options for Change
<i>Headwaters RMP</i> <i>Judith RMP</i>	No	- Continue vegetation treatments including mechanical, prescribed burning, chemical, and biological (classical and nonclassical). - Continue to implement policies and practices related to cleaning vehicles to minimize spread of noxious weeds. - Require the use of certified noxious weed-free forage within the planning area. - Require that any seed or seed mixtures used in management be weed free.

Planning Decision	Is Decision Responsive to Current Issues?	Options for Change
		• Emphasize cooperative weed management and prevention. • Utilize updated BLM-approved herbicide and adjuvant lists, and approved biological controls when they become available for use. • Utilize new herbicides and biological control methods that have been developed since the last RMP and amendments; monitor success of past integrated weed control methods. • Adjustments to carrying capacity or other intensive management may be necessary on allotments in response to noxious weed infestations. • Prescriptive grazing may be used for biological control of noxious weeds.

Table 4-1
Preventative Measures by BLM Activity

BLM Activity	Prevention Measure
Project Planning	• Incorporate prevention measures into project layout and design, alternative evaluation, and project decisions to prevent the introduction or spread of weeds. • Determine prevention and maintenance needs, including the use of herbicides, at the onset of project planning. • Before ground-disturbing activities begin, inventory weed infestations and prioritize areas for treatment in project operating areas and along access routes. • Remove sources of weed seed and propagules to prevent the spread of existing weeds and new weed infestations. • Pretreat high-risk sites for weed establishment and spread before implementing projects. • Post weed awareness messages and prevention practices at strategic locations such as trailheads, roads, boat launches, and public land kiosks. • Coordinate project activities with nearby herbicide applications to maximize the cost-effectiveness of weed treatments.
Project Development	• Minimize soil disturbance to the extent practical, consistent with project objectives. • Avoid creating soil conditions that promote weed germination and establishment. • To prevent weed germination and establishment, retain native vegetation in and around project activity areas and keep soil disturbance to a minimum, consistent with project objectives. • Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas or restrict travel to periods when the spread of seeds or propagules is least likely. • Prevent the introduction and spread of weeds caused by moving weed-infested sand, gravel, borrow, and fill material. • Inspect material sources on site and ensure that they are weed-free before use and transport. Treat weed-infested sources to eradicate weed seed and plant parts and strip and stockpile contaminated material before any use of pit material. • Survey the area where material from treated, weed-infested sources is used for at least 3 years after project completion to ensure that any weeds transported to the site are promptly detected and controlled. • Prevent weed establishment by not driving through weed-infested areas. • Inspect and document weed establishment at access roads, cleaning sites, and all disturbed areas; control infestations to prevent weed spread within the project area. • Avoid acquiring water for dust abatement where access to the water is through weed-infested sites. • Identify sites where equipment can be cleaned. Clean equipment before entering public lands. • Clean all equipment before leaving the project site if operating in areas

BLM Activity	Prevention Measure
	infested with weeds. • Inspect and treat weeds that establish at equipment cleaning sites. • Ensure that rental equipment is free of weed seed. • Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.
Revegetation	• Include weed prevention measures, including project inspection and documentation, in operation and reclamation plans. • Retain bonds until reclamation requirements, including weed treatments, are completed, based on inspection and documentation. • To prevent conditions favoring weed establishment, reestablish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques. • Maintain stockpiled, uninfested material in a weed-free condition. • Revegetate disturbed soil (except travel ways on surfaced projects) in a manner that optimizes plant establishment for each specific project site. For each project, define what constitutes disturbed soil and objectives for plant cover revegetation. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. • Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings). • Inspect seed and straw mulch to be used for site rehabilitation (for wattles, straw bales, dams, etc.) and certify that they are free of weed seed and propagules. • Inspect and document all limited-term ground-disturbing operations in noxious weed infested areas for at least three growing seasons following completion of the project. • Use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available. • Provide briefings that identify operational practices to reduce weed spread (for example, avoiding known weed infestation areas when locating fire lines). • Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established. Sites could include road and trail ROWs and other areas of disturbed soils.

4.1.6 Fish and Wildlife

4.1.6.1 Fish and Aquatic Communities

Ability of Current Management Direction to Achieve Desired Conditions

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Evaluate fish habitat on a case-by-case basis using the concepts of “Essential” and “Critical” habitat for sensitivity evaluation.	Yes	Evaluate fish habitat during project level planning. National Environmental Policy Act (NEPA) analysis is an ongoing practice.	None.
No permitted activities in habitat for threatened and endangered (T&E) species that would jeopardize the existence of the species.	Yes	Any actions in T&E habitat require Endangered Species Act (ESA) Section 7 consultation.	None.
When possible, management activities in T&E habitat will be designed to benefit those species.	Yes	Requirement under FLPMA.	None.
Fish stocking proposals will be evaluated and recommendations will be made to the Montana Department of Fish, Wildlife and Parks (MFWP).	Yes	Still valid, although new locations for stocking are limited by budgetary and staffing constraints.	None.
Bridges and culverts will maintain adequate fish passage.	Yes	Still a valid objective and encouraged by current BMPs.	None.
Design management activities in riparian zones to maintain or improve habitat condition.	Yes	Still a valid objective.	None.
Roads and utility corridors will avoid riparian zones to the extent practicable.	Yes	Still a valid objective and encouraged by BMPs.	None.
Implement BMPs that protect water and riparian resources.	Yes	Implementing BMPs are still practiced, although those BMPs have changed.	Change to use the most current BMPs.
Consider fisheries potential when designing new reservoirs.	Yes	Still a valid objective. However, new reservoirs large enough to support fish populations are not likely to be created on BLM.	Re-examine reservoirs currently large enough to support fisheries but do not because of other conditions (i.e., alkalinity)

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
			or low water levels from impaired dams).
Fence new fisheries reservoirs.	Yes	Still a valid objective.	If new reservoirs were created, fencing would be part of the design. However, budgetary constraints may limit or delay implementation.
Fence existing fisheries reservoirs, if necessary, to improve emergent vegetation, shade, and/or recreational experience.	Yes	Still a valid objective.	Budgetary constraints may limit or delay implementation.
Allow periodic, short-term grazing of fenced reservoirs, if necessary, to maintain or improve wetland habitat.	Yes	Still a valid objective.	None.
Identify new fisheries reservoirs; give priority to reservoirs near population centers and major access routes.	Maybe	New reservoirs large enough to support fisheries are unlikely to be built. Current drought conditions limit creation of new water impoundments that would affect fish-bearing streams. The BLM lands are limited near population centers.	Re-examine reservoirs currently large enough to support fisheries but do not because of other conditions (i.e., alkalinity or low water levels from impaired dams).
Attempt to develop self-sustaining game fish populations while recognizing some reservoirs as put-and-take fisheries.	Yes	Habitat improvements can be enacted on BLM lands, but stocking is limited to MFWP authority.	Budgetary constraints may limit habitat improvements.
Improve existing habitat by modifying existing high potential reservoirs.	Yes	Still a valid objective.	Budgetary constraints may limit habitat improvements.
Attempt to locate reservoirs in a cluster with a variety of self-sustaining game fish.	No	Reservoirs are responsive to needs, in most cases, livestock needs. Drought conditions limit the possibility of creating new reservoirs only for wildlife/fisheries. Fish species being stocked are decided by MFWP.	The area where a cluster of reservoirs already exists – the Missouri/Musselshell Breaks – a variety of species are already stocked.

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Sharp-tailed Grouse: Woody vegetation will be improved or maintained and careful consideration given to the location of all water improvements within 1½ miles of sharp-tailed grouse leks.	1994 JVP RMP and Amendments	Yes	Limited data on lek locations.	Consider range improvement impacts on woody vegetation in sharp-tailed grouse habitat.
Waterfowl: The BLM will emphasize the mallard, northern pintail, redhead, and canvasback during habitat development. Potholes, in association with the existing stock water reservoirs, provide additional waterfowl production. Potholes would be developed into complexes with large, permanent water bodies, brood ponds, and pair ponds.	JVP	No	Decreased emphasis on wetland construction in areas that do not have seasonal pothole features.	Waterfowl projects will be considered, where appropriate, and where they will not degrade habitat for other sensitive species.
Great blue Heron and Double-Crested Cormorant: Rookeries identified on BLM-administered lands are protected. Surface disturbance is not allowed within 1,000 feet of rookeries.	JVP	Yes		
Raptors: Follows recommendations in <i>Suggested Practices for Raptor Protection on Power Lines</i> (Olendorff, et al., 1981). Various techniques are needed to plant new trees and/or nesting structures to secure adequate nesting areas for the Swainson's hawk. These nesting structures	JVP	Yes, with modification	Needs to be clarified to reflect current guidelines.	

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
need to be protected from livestock by fencing or placing large rocks around the nesting structure. Potential peregrine falcon nesting cliffs are scattered throughout the Missouri River Breaks and mountain ranges in the RMP area. These areas should be considered future reintroduction sites. The BLM may provide artificial nesting platforms for osprey, golden eagles, and other raptors. The BLM may develop nesting areas in high cliff faces for peregrine falcons.				
Predators: Animal damage control is permitted in the RMP area subject to the stipulations outlined in the annual Animal Damage Control Plan.	JVP	Yes		
Big Game: Areas that can support woody vegetation establishment and respond to rest need to be identified, maintained, and managed. Browse is important in maintaining big game and upland bird populations. The BLM will minimize or prevent road and trail development on crucial big game and upland bird habitat areas.	JVP	Yes, with modification	Should be based on monitoring and input from MFWP. "Crucial" big game habitat has not been identified.	Identify areas where woody vegetation is over utilized and primary cause(s). Coordinate with MFWP to improve areas where woody vegetation over use is identified. Coordinate with MFWP to identify important wildlife habitats that

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
				need special management consideration.
Elk and Bighorn Sheep: The BLM will provide 410,796 acres of habitat on BLM land for elk in the Missouri Breaks, Highwood Mountains, Square Butte, Little Belt Mountains, Judith Mountains, and Little and Big Snowy Mountains. This would be consistent with the MFWP <i>Elk Management Plan</i>. The BLM will provide 66,187 acres of habitat on BLM land to maintain and expand bighorn sheep in the planning area. This will also allow for new bighorn sheep populations in unoccupied habitat, where suitable forage is available, in the Missouri Breaks and Bull Creek areas. Off-road vehicle use within elk and bighorn sheep habitat will be restricted seasonally to designated roads and trails to reduce wildlife harassment and provide habitat security. The BLM will plant lure crops on BLM land where it is determined to be necessary and feasible to draw elk from private cropland where depredation conflicts are occurring. Planting lure crops would be considered for small areas.	JVP	Yes, in part	Reassess in light of developments in MFWP Elk Management Plan.	Adjust to reflect current MFWP Elk Management Plan. Adjust bighorn sheep and domestic sheep or goat allotment use allocation to current recommended buffers. Bighorn sheep and domestic sheep allotment allocation guidelines need to be strengthened. Reassess bighorn sheep guidelines for mining operations. Identify new, potential area for bighorn sheep reintroduction. Re-evaluate whether lure crops on BLM should still be considered.

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Management to protect lure crops could include fencing, grazing methods, or a change in season-of-use for livestock. Planting and maintenance of lure crops would be most feasible under a cooperative arrangement with MFWP, other organizations, or individuals. Domestic sheep grazing will not be allowed to overlap bighorn sheep				
habitat to ensure no contact between domestic sheep and bighorn sheep. This would prevent the spread of infectious diseases. The following mitigation measures will be applied to prevent unnecessary or undue degradation on plans of operation within elk habitat in the Judith and North Moccasin Mountains: Seasonal restrictions will be placed on mineral exploration during critical wildlife periods (12/1-3/31) on a case-by-case basis to prevent unnecessary or undue degradation. Current reclamation will be emphasized to keep simultaneous disturbance to a minimum, thereby reducing wildlife habitat	JVP			

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
loss. Reclamation will utilize plant species suitable for wildlife forage if slope stability and revegetation concerns can be satisfied. Wildlife-proof fences will be required around solution ponds to prevent wildlife mortality. Offsite compensation will be considered to mitigate crucial habitat loss. This may include habitat improvement or replacement with comparable sites. Offsite water will be developed, if needed, to draw wildlife from active mining sites.				
Fish and wildlife habitat will continue to be evaluated on a case-by-case basis as a part of project level planning. Such evaluation will consider the significance of the proposed project and the sensitivity of fish and wildlife habitat in the affected area.	<i>Headwaters</i>	Yes, part of NEPA		
Seasonal restrictions will continue to be applied where they are needed to mitigate the impacts of human activities on important seasonal wildlife habitat. The major types of seasonal wildlife habitat and the time periods which restrictions may be needed are shown in Table 3-3.	<i>Headwaters</i>	Mostly—need to better define restricted area and period for raptors; should also include general nesting period for migratory birds. Grizzly Bear	Update important seasonal ranges with MFWP-coordinated information.	Define restricted area and period for raptor species similar to Colorado Division of Wildlife guidance. Update

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		Conservation Strategy (GBCS) zones for grizzly bear guidance.		important seasonal ranges with MFWP-coordinated information. Use Northern Continental Divide Ecosystem (NCDE) GBCS management zone guidance.
No activities will be permitted in habitat for T&E species that would jeopardize the continued existence of such species. Whenever possible, management activities in habitat for threatened, endangered, or sensitive species will be designed to benefit those species through habitat improvement. The MFWP and the FWS will be consulted prior to implementing projects that may affect habitat for T&E species. If a may affect situation is determined through the BLM biological assessment process, then consultation with the FWS will be initiated as per Section 7 of the ESA, as amended.	<i>Headwaters</i>	Yes, part of ESA.		
To the extent practicable, management actions within occupied grizzly bear	<i>Headwaters</i>	Need to update.		Use management guidelines in

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
habitat will be consistent with the goals and objectives contained in the <i>Grizzly Bear Recovery Plan</i> (FWS, 1982), and the guideline developed through the Interagency Wildlife Monitoring Program for mineral exploration and development.				<i>NCDE Grizzly Bear Conservation Strategy.</i>
Sufficient forage and cover will be provided for wildlife on seasonal habitat. Forage and cover requirements will be incorporated into AMPs and will be specific to areas of primary wildlife use.	<i>Headwaters</i>	Yes, in part. The AUMs were allocated 60 percent wildlife and watershed and 40 percent livestock. If specific objectives are required for defined areas, it needs to be clear where these are located, otherwise only standard land health evaluations will be used.	Most allotments in Headwaters RA are small isolated parcels and are usually managed as custodial allotments.	
Range improvements generally will be designed to achieve both wildlife and range objectives. Existing fences may be modified and new fences will be built so as to allow wildlife passage. Water developments generally will not be established for livestock where significant conflicts over vegetation would result. Water will be	<i>Headwaters</i>	Yes		

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
provided in allotments (including rested pastures) during seasonal periods of need for wildlife.				
Vegetative manipulation projects will be designed to minimize impact on wildlife habitat and to improve it whenever possible. The MFWP will be consulted in advance on all vegetative manipulation projects, including timber harvest activities involving: the construction of new access into roadless elk summer/fall range; critical, crucial, or essential wildlife habitat; and sales of over 250,000 board feet.	<i>Headwaters</i>	Yes, in part. “Critical,” “crucial,” and “essential” need to be defined, as well as where they’re located. Wildlife habitat is general/vague — should be more specific on desired conditions.		Define desired habitat conditions and emphasize benefits to special status species (SSS) through vegetation manipulation as the highest priority.
Where applicable, the elk management guidelines contained in the <i>Montana Cooperative Elk-Logging Study</i> (FS, 1982) will be followed. These include: Managing public vehicle access to maintain the habitat effectiveness of security cover and key seasonal habitat (such as winter range and calving/nursery areas) for deer and elk; Maintaining adequate, untreated peripheral zones around important moist-sites (i.e., wet-sedge meadows, springs, riparian zones); Maintaining adequate	<i>Headwaters</i>	Yes, in part	Research is dated—some guidance is still relevant, especially security cover, meadow/riparian buffer zones and slash depth.	Update using current literature, which may or may not include the <i>Montana Cooperative Elk-Logging Study</i> (FS, 1982). Define BMPs for mechanical veg. treatments, including desired snag and coarse woody debris densities within treatment units.

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
thermal and security cover on deer and elk habitat, particularly within timber stands adjacent to primary winter foraging areas; Ensuring that slash depth inside clearcuts does not exceed 1½ feet; and Generally discouraging thinning immediately adjacent to clear cuts.				
Wildlife reintroductions and fish stocking proposals will be evaluated and recommendations will be made to the MFWP. The BLM policy requires that a habitat management plan (HMP) be prepared prior to any wildlife reintroduction.	<i>Headwaters</i>	Yes		

In regards to the aquatic resources, the following potential management opportunities may exist.

- Implement existing and develop additional policies to protect threatened or endangered species that have been listed since the last RMP. Provide language to adapt to future listings/delistings.
- Implement existing and future interagency conservation agreements for sensitive aquatic species (Yellowstone cutthroat trout, westslope cutthroat trout, bull trout, and fluvial Arctic grayling).
- Identify and assist in the management of areas suitable for re-establishment of westslope cutthroat trout or other sensitive species.
- Minimize impacts to riparian areas and identify restoration activities to provide better aquatic and riparian habitat on land managed by BLM.
- Identify riparian protection zones for management of riparian areas.
- Implement restoration activities of habitat for fish and other aquatic species.
- Wildland fire management prescriptions may be designed to benefit riparian and aquatic habitats.

Areas of Relative Ecological Importance

Westslope cutthroat trout habitat – Any areas where genetically pure westslope cutthroat trout occur within the field office, now or in the future, are of ecological importance. To aid in this objective, acquisition of areas near BLM with genetically pure westslope cutthroat trout could be considered. Also, habitat improvement projects or nonnative removals (Chicago Gulch) could be an option.

Breaks fishing reservoirs – This area has a concentration of reservoirs created for wildlife and fisheries. It is the only cluster of recreational fisheries reservoirs in the field office and provides a variety of fishing opportunities. Maintaining these fisheries not only maintains recreational opportunities, but an important water source for wildlife.

Fish-bearing streams – Any streams that currently provide habitat for fish, or could possibly in the future, if water quality or quantity improves. This includes all historically-perennial streams and all intermittent streams with significant perennial pools.

4.1.6.2 Wildlife and Habitat

Current management direction is to manage for desired wildlife habitat conditions and meet future resource demands. The increased pressures to develop and utilize resources in areas that also provide important wildlife habitat could result in the loss of high quality vegetation and water, degradation of areas that provide wildlife security zones, and compromising undisturbed areas that provide important breeding habitat. All of these habitat components are necessary for the long-term viability of most wildlife species indigenous to public lands managed by the LFO.

Resource demands that are likely to affect wildlife habitat in the planning area include outdoor recreation, private land development adjacent to public lands, and energy and mineral development (renewable and nonrenewable). With current management direction, naturally occurring phenomena, including large-scale wildfire and long-term drought, coupled with the resource demands listed above, would have long-lasting impacts on wildlife habitat.

Emphasis is being placed on maintaining species diversity and keeping native ecosystems healthy to keep additional species from becoming listed. Possible management opportunities include:

- Prioritize land acquisition options for wildlife species.
 - Assess the benefits of previous habitat enhancement activities and identify specific new opportunities.
 - Potential bighorn sheep transplant (introduction) in the Musselshell Breaks.
 - Identify critical- or high-value habitat for game, nongame, and other priority species.
 - Re-evaluate protection levels afforded by ACEC regulations.
 - Habitat management emphasis within the Rocky Mountain Front Conservation Area (FWS Land Protection Plan).
 - Alternative Ear Mountain Trail possibilities and seasonal opening dates.
 - Consider additional ROW avoidance or exclusion areas adjacent to Greater Sage-grouse (GRSG) habitat for wildlife and habitat management.
 - Establish fire use parameters for desirable wildfire effects.
 - Wildlife disease prevention/mitigation – in particular, specific actions for white nose syndrome (WNS), West Nile virus (WNV), chytrid fungus, and bighorn sheep diseases.
 - When establishing desired habitat conditions and vegetation treatments, consider pollinators.
- Areas of Concern from scoping and other input include:

- Renewable and nonrenewable energy development
- Critical and other important habitats
- Recreational and OHV use
- Native and nonnative species interactions

Most of the management decisions related to wildlife in the 1984 *Headwaters* and 1994 *JVP RMPs* and amendments can be categorized as decisions to maintain species or habitat, collect additional data, cooperate with other agencies, provide and protect habitat for specific species or populations, or improve habitats for particular species. As wildlife data is updated as part of the RMP revision process, it is recommended that the LFO determine if the new information results in needed modifications to existing management prescriptions.

Management opportunities for the revised RMP should include identifying desired habitat conditions or population objectives for major habitat types that support a wide variety of game and nongame species. Once this is determined, actions and area-wide use restrictions needed to achieve desired population and habitat conditions could be identified.

Coordinating with other groups who are collecting regional data and using their data as a framework in which to interpret habitat provision/protection needs could enhance the BLM's responsiveness toward maintaining desired habitat conditions. For example, ecological assessments by the Natural Resources Conservation Service (NRCS), Montana Natural Heritage Program (MNHP), or MFWP may provide data on regional populations and regional conservation goals that might provide a larger context for the BLM to evaluate its desired habitat conditions and habitat management decisions.

Areas of ecological importance or priority wildlife habitats include the sagebrush steppe, native grasslands, riparian-wetlands, and aquatic ecosystems. The following areas provide critical habitat for priority species, such as big game, migratory birds, and raptors:

- Sagebrush habitats that provide important big game winter habitat.
- Sagebrush habitats that provide seasonal or year-round Greater Sage-grouse habitat.
- Juniper habitat that provide crucial winter range and protection for mule deer and other wildlife.
- All SSS habitats.
- Migratory birds listed in the Montana Bird Conservation Plan.
- Bighorn sheep protection areas.
- Continue Greater Sage-grouse conservation strategies established with the GRSJ JVP Plan amendment to address habitat management in the planning area.
- The BLM should identify key parameters and strategies to improve habitat for declining endemic grassland birds, including identification of critical breeding habitat.
- In conjunction with other wildlife resource agencies, the BLM should develop assessment and monitoring programs for all endemic species on BLM lands.
- BLM management activities should effectively maintain and enhance desirable bird habitat.

Fragmentation of habitats and corridors continues to be an ongoing problem for wildlife. Use minimum road- and site-construction specifications based on projected transportation needs. Schedule construction times to avoid seasonal use periods for wildlife, as designated in species-specific guidelines. Coordinate with staff when new roads or other ROWs and other realty actions are proposed to determine if concerns with wildlife displacement and/or habitat fragmentation exist.

4.1.6.3 Special Status Species (Wildlife)

Options for Change
Consider on a case-by-case basis permanent structures and linear facilities (e.g., roads, pipelines) in aquatic and riparian-wetland areas. • Identify occurrence and distribution, potential conflicts, and management strategies to provide adequate protection. • Prioritize land acquisition options for SSS. • Develop monitoring plans to determine habitat trends. • Identify big game management strategies. • Continue to identify wildlife habitat improvement opportunities. • Develop SSS conservation measures. • Promote coexistence of multiple-use activities and SSS habitat, where possible. • Establish management prescriptions or stipulations for SSS. • Determine if exclusion by fencing, signs, or timing of activities can provide better protection for special status plant species.

4.1.6.4 Invertebrates

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
There are currently no planning decisions with regard to invertebrates.	None	-	-	-

4.1.6.5 Pathogens

Planning Decision	Decision Document	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
There are currently no planning decisions with regard to pathogens.	None	-	-	-

4.1.7 Wildland Fire and Ecology

The revised RMP must address fire management and provide guidance to integrate resource needs, fuels management, prescribed fire, and fire suppression operations. The RMP will establish objectives, constraints, and guidance to integrate both wildland and prescribed fire with resource objectives. Furthermore, the RMP must align with fire management strategies that result in minimum suppression costs, considering firefighter and public safety, benefits, and values to be protected; all consistent with resource objectives. Fire management decisions must reflect the protection of human life as the single,

overriding priority. Other priorities, such as protecting human communities and infrastructure, other property and improvements, and natural or cultural resources, are based on values to be protected, human health and safety, and the costs of protection.

Adequacy of Current Management Direction and Options for Change

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
<i>Headwaters RMP</i> (1984) “Fire Program: Until the 1978 Normal Year Fire Plan is updated, the primary fire protection objective will continue to be the control, during the first burning period, of all wildfires on or threatening public land. Modified fire suppression areas may be established when the <i>Normal Year Fire Plan</i> is reviewed, based on the consideration of the following criteria: values at risk; fire behavior; fire occurrence; beneficial fire effects, including but not limited to a reduction in fuel loading; fire suppression costs; and consistency with other agency plans and policies. Prescribed burning will continue to be used in support of resource management objectives.” Page 24 (Management Guidance Common to all Alternatives)	No	The 1984 <i>Headwaters RMP</i> does not account for minimum suppression costs, firefighter and public safety, benefits, and values to be protected; all consistent with resource objectives. It also does not provide objectives, constraints, and guidance for wildland fire suppression and prescribed fire.	Develop guidance for beneficial use of wildland fire suppression and prescribed fire to meet resource objectives. Fire management decisions must reflect the protection of human life as the top priority while taking into consideration resource objectives. Identify needed vegetation treatments, appropriate management on wildland fires, and constraints to implementing treatments or suppression actions. Specifically address fire management in ACECs and other special management areas. Use Fire Regime Condition Class (FRCC) to help define desired vegetation conditions and identify areas that need or would benefit from fire or other fuels treatments. Encourage interdisciplinary, integrated approach to fire and resource management within the planning area.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
<i>Judith-Valley-Phillips RMP (1994a)</i>	Partially	The <i>Judith-Valley Phillips RMP (1994)</i> does offer guidance on both wildfire suppression and prescribed fire operations. However, due to increased fire occurrence, decreased ecological site condition, and an increase in wildland urban interface since the 1994 approved plan, a more thorough examination and implementation of current fire management guidance would better integrate resource needs, fuels management, and wildland fire suppression operations.	See ' <i>Headwaters RMP (1984)</i> ' Options for Change above.
<i>Fire/Fuels Management Plan Environmental Assessment (EA)/Plan Amendment for Montana and the Dakotas (2003a)</i>	No	The issues addressed in the <i>Fire/Fuels Management Plan EA/Plan Amendment for Montana and the Dakotas</i> must be considered in the planning process for the new Lewistown RMP.	Develop guidance for wildland fire suppression and fuels treatments: • Wildland fire management for resource benefit • Fuels management for resource benefit • Moving areas toward historic condition class • Use of management-ignited fire • Fuels reduction in the wildland urban interface (WUI) • Resource management constraints • Wildland fire management strategies

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
			- Benefit to resource objectives - Rehabilitation and stabilization
			The RMP will be in compliance with the guidance set forth in the <i>Guidance for Implementation of Federal Wildland Fire Management Policy</i> (2009)
			The RMP could develop programmatic emergency stabilization and rehabilitation (ESR) guidance that would define resource condition criteria and processes to facilitate the decision, initiation, and implementation of rehabilitation plans and treatments.

Management Opportunities:

Management opportunities for wildland and prescribed fire management are adequately described in the 'Options for Change' column in the table above and need no further elaboration.

4.1.8 Cultural and Heritage Resources

Ability of Current Management Direction to Achieve Desired Conditions

When surface-disturbing activities such as energy development, fuels reduction projects, range improvements, and recreation site development threaten cultural resources, the cultural resources program provides support by evaluating cultural resource sites through Section 106 consultation. Relying on the reactive nature of Section 106 preserves resources from direct effects but also results in the decline of cultural sites due to natural deterioration, incidental damage, and vandalism. Additionally, there have been policy changes in the BLM cultural resource management program since completion of the *Judith* and *Headwaters* RMPs. Management guidance contained in BLM Manual 8130.13 is not present in the 1984 RMP. Additionally, allocation of cultural resource sites to use categories, as required in BLM Manual 8110.4, is ongoing, but most of the previously-recorded sites have not been assigned to use categories. The RMPs were developed prior to the Native American

Graves Protection and Repatriation Act, the 1992 amendments to the NHPA of 1969, and Executive Order 13007, and it does not have specific resource management goals and actions that address these and other directives. Additionally, the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation (ACHP), and the National Council of State Historic Preservation Officers (NCSHPOs) (1997 and 2012); the Montana BLM/State Historic Preservation Officer Protocol (1998); and 2003 BLM Montana Handbook Guidelines all have helped streamline cultural resource procedures not covered in the *Judith and Headwaters RMPs*.

A Class I overview has been drafted to comply with Manual H-1601-1, Manual Section 8110, and to update the current cultural resource GIS database. The overview accomplishes the following:

- Synthesizes all of the previous archaeological and historical work;
- Outlines the prehistory and history as currently understood;
- Identifies data gaps in our knowledge;
- Develops management recommendations for site types; and
- Helps define and evaluate the nature and distribution of property types, the historic and prehistoric contexts of properties of special significance, the uses to which property types may be assigned, the threats to site integrity, and the strategies for resource management and protection.

Issues

- The increased emphasis on domestic energy development, both renewable and nonrenewable, and the role that resources on public land as well as split estate may play, is leading to potential conflicts between energy development and values placed on cultural and heritage properties.
- Effects (perceived or real) of travel management decisions on the integrity of historic properties are being scrutinized more closely, necessitating increased inventory and understanding of cultural resources.

Options for Change
• Continue to emphasize the value of proactive (Section 110) cultural resource inventories in high priority areas, and in areas with limited inventory; • Nominate Square Butte Archaeological District, Lewistown Satellite Airfield Boundary Increase IV (Gunnery Range), and the Wartenluft Homestead to the National Register of Historic Places (NRHP), and identify other opportunities for future nominations; • Use the RMP revision process to develop a proactive cultural resource management framework that incorporates changes in BLM policy and law and archaeological theory; • Protect sites by developing and implementing additional stipulations on all new ground-disturbing activities and oil and gas leasing based on assigned use categories to enhance cultural resource management decisions to protect cultural resources; • Use the Class I effort to guide the cultural resources program and provide a framework for a cultural resources management plan. Allocate cultural resources to use categories, and establish criteria for management of sites yet to be identified. This Class I could also provide a framework for priority cultural resource areas or site types, as well as identifying resource types (i.e., historic roads and trails, open range era, fur trapping/trading era sites) that tend to be poorly represented in the historic record. This could allow managers to know in advance how to respond to conflicts that arise between specific cultural resources and other land uses; • Emphasize the importance of large block inventories early in the planning stages for project development, especially for energy development projects. These large inventories have greatly

Options for Change
improved the ability of the developer/operator and the BLM to cooperate as to the best placement of facilities while protecting cultural resources; • Continue working with partners on research, interpretation, preservation, and education projects (i.e., universities/colleges, local schools, museums, historical associations); • Continue monitoring sites internally and with site stewards, using the information gained in adaptive management decisions; • Maintain our historic buildings and structures for interpretive and educational use, as well as recreational opportunities. • Provide the public opportunities to be involved in historic preservation, including site monitoring, preservation, and recreation (i.e., Montana Site Stewardship Program, cabin rental, self-guided tours); • Identify cultural resource values in special designation areas (e.g., ACECs, NHTs); • Continue consultation with Native American tribes to help redevelop ties to the landscape, and identify and protect sacred and traditional use areas.

4.1.9 Paleontological Resources

Past and current management practices have had little appreciable effect on paleontological resources. There have been no reported instances of damage to paleontological resources resulting from implementation of RMP management decisions. Changes in paleontological resources management policy and increases in paleontological resource data should be incorporated into the revised RMP. Decisions for inventory and management of paleontological resources could be determined based on fossil diversity, distribution, and reasons for their importance to science. Priority areas for inventory could be identified along with future research needs.

The goals of managing paleontological resources are:

- To minimize loss of significant paleontological resources due to erosion or theft;
- Ensure that significant paleontological resources are collected professionally, stored in qualified repositories, and made available for research and education;
- To conduct regular inventories of areas known to produce significant paleontological resources and investigate areas of unknown or uncertain potential for possible reclassification of potential fossil yield classification (PFYC) potential;
- To increase opportunities for public enjoyment and education about paleontological resources which might include facilitating responsible casual collection, providing signage or other educational content in appropriate areas, or providing various educational programs for the public;
- To ensure that all land actions, including surface-disturbing actions, land acquisitions, disposals, and swaps consider paleontological resources in the process; and
- To explore the application of special management designation to either protect and limit activities that impact paleontological resources, or to identify areas to encourage use such as casual collection.

Options for Change
• Emphasize the value of proactive inventory in high priority areas and in areas with limited inventory; • Protect localities by developing and implementing stipulations on all new ground-disturbing activities; • Use the Class I effort to guide the paleontology program and provide a framework for a paleontological management plan; • Continue working with partners on research, interpretation, preservation, and education projects (i.e., universities/colleges, local schools, museums); • Identify paleontological values in special designation areas (i.e., ACECs).

4.1.10 Visual Resources

Adequacy of Current Management Direction and Options for Change

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The BLM will manage activities to comply with the VRM policy (<i>JVP RMP</i> , p. 25).	No	A visual resource inventory (VRI) is currently being conducted. Once the VRI is complete, LFO will assign VRM classes for all lands within the planning area. While visual values will be considered, they do not establish management direction; final VRM objectives and boundaries will result from and reflect all resource allocation decisions made in the planning area. For example, some areas currently are experiencing impacts where the activities are not discretionary, such as valid existing rights. These impacts must be allowed, after due effort to minimize effects on visual values, to be consistent with those valid existing rights. This planning effort will weigh all resource allocation decisions so as not to create	Visual resources will be managed in accordance with objectives for VRM classes that have been assigned to the planning area.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		conflicts managing the very values that the management plan seeks to foster.	
None.	No		In accordance with the BLM Manual H-1601-1 Land Use Planning Handbook, VRM classes will need to correlate with recreation management objectives and prescriptions that have been set for recreation management zones in every special recreation management area (SRMA).
Visual resources will continue to be evaluated as part of activity and project planning (<i>Headwaters RMP</i> , p. 16).	Yes	Adequately protects resources.	Visual resource management objectives will be considered before authorizing land uses that may impact them. Visual resource management requirements are applied only to BLM-administered lands or to BLM-approved actions on split estate lands (split estate lands are nonfederal surface ownership over BLM-administered federal minerals).
Surface developments will be designed or mitigated to compliment and harmonize with the natural features and the VRM class objectives. The visual contrast rating will be used as a guide for all major projects proposed on BLM lands that fall within VRM	Partly	Blending includes proper siting, color, and screening. Blending techniques will be decided during the visual contrast rating analysis. Facilities or structures such as power lines, pipelines, oil drills/wells, and storage tanks are required to be screened, painted, and	Surface-disturbing activities will be prohibited in VRM Class I or II areas if adverse impacts cannot be mitigated or avoided.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Classes I, II, and III areas (<i>JVP RMP</i> , p. 26).		designed to blend with the surrounding landscape.	
Manage Square Butte as VRM I (<i>JVP RMP</i> , p. 26).	Yes	Meeting VRM I and WSA standards. All wilderness study areas (WSAs) are managed as VRM Class I based on BLM guidance.	Facilities or structures proposed in or near WSAs will be designed so as not to impair wilderness suitability.
Judith Mountains Scenic Area ACEC designated as VRM II because of its relatively visually-undisturbed character (<i>JVP RMP</i> , p. 26)	Yes	The area is not managed as a VRM II. It is being managed similar to a VRM IV.	Manage as a VRM II.

4.1.11 Wilderness Characteristics

Adequacy of Current Management Direction and Options for Change

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The <i>Judith RMP</i> , <i>Headwaters RMP</i> , and subsequent amendments did not address wilderness characteristic resources.	No	The RMP needs to address the current policy and guidelines for lands with wilderness characteristics.	Incorporate management criteria for lands with wilderness characteristics.
None.			Management opportunities to be considered in land use plan alternatives: - Establish VRM class objectives to guide the placement of roads, trails, and other facilities. - Establish conditions of use to be attached to permits, leases, and other

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
			authorizations. • Designate lands as open, closed, or limited to OHVs to achieve a desired visitor experience where wilderness characteristics will be a priority over other uses in an area. • Provide predominantly untrammelled, natural environments for the physical, biologic, and social components of wilderness. The physical and social components are managed so that natural processes are unimpeded by human activities or use. Natural processes, including naturally occurring fire, soil erosion, and insect and disease cycles, proceed unrestricted by man. Emphasize high levels of solitude, few party encounters, and high opportunities for challenge, risk, and self-reliance. • Identify allowable uses and surface restrictions to avoid

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
			potential adverse effects. Review public proposals for additional areas that may contain wilderness characteristics and need to re-evaluate the objectives wanted for those areas. Evaluate areas possessing wilderness characteristics and consider limiting or withdrawing oil and gas/mining activities in areas demonstrating wilderness character.

4.1.12 Cave and Karst Resources

Adequacy of Current Management Direction and Options for Change

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
BLM will manage significant cave resources. One significant cave identified in the planning area: Tate-Poetter Cave.	No	Need to address all cave/karst features and discuss the known caves that have not been surveyed for significance.	For new caves surveyed for significance and meet the criteria, designated as significance. Within the plan revision, set up cave management plan direction. Making status as significant caves to protect resources both geologic and animal.

RESOURCE USES

4.1.13 Minerals and Energy Resources

This section discusses solid leasables, oil and gas leasables, nonenergy solid leasables, locatable minerals and salable minerals.

4.1.13.1 Solid Leasables

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The BLM will provide opportunities for exploration and possible development of oil shale. Areas prospectively valuable for oil shale will remain open for issuing prospecting permits and leasing.	Yes		Through planning, potential impacts to specific resources can be identified and reasonably foreseeable developments (RFDs) can be developed to mitigate those impacts.
The BLM will provide opportunities for coal exploration and production while maintaining nonmineral resource values. The planning area will be available for coal exploration licenses. Coal licenses to mine for domestic use will be available and use per family may not exceed 20 tons annually. Coal leasing by application will remain available for underground and surface mining consideration through the plan amendment process.	Yes		Through planning, potential impacts to specific resources can be identified and RFDs can be developed to mitigate those impacts.
Prior to issuing coal leases, unsuitability criteria will be applied and a plan amendment prepared.	Yes	There is very little development potential for coal within the planning area.	Consider carrying through similar plan amendment process language for coal leasing.

4.1.13.2 Oil and Gas Leasables

Options for Change
• Develop necessary oil and gas lease stipulations and practical exceptions; • Determine if any constraints developed during Lewistown RMP would apply to existing leases and, if so, how such action would be implemented; • Develop BMPs and encourage their use for oil and gas and geophysical operations; • Develop long-term resource condition objectives and compatible reclamation standards.

Additional Issues and Management Concerns for Oil and Gas Leasables

- What areas are suitable or not suitable, particularly those with no surface occupancy areas, for oil and gas development activity? Should these existing areas be changed?
- Are the current timing limitation stipulations effective in protecting resource values (i.e., wildlife, soil, and watershed)? Should they be changed?
- Disposal of produced water via surface water discharge permits (i.e., National Pollution Discharge Elimination System [NPDES] permits), underground injection permits, or by using evaporation ponds.

A number of items over the past two and one-half decades have resulted in necessary changes to BLM planning documents. The *JVP RMP*, which was signed in 1994, was determined to be in violation of NEPA, ESA, and NHPA in regards to oil and gas leasing per a March 31, 2004, decision made in US District Court for the District of Montana by Judge Donald W. Molloy. As a part of Judge Molloy's decision, the BLM was ordered to prepare a new environmental document that would adequately address potential impacts from oil and gas leasing prior to the issuance of any new oil and gas leases.

One concern that has arisen regarding oil and gas leasing and development is management of split estate lands. For purposes of this report, split estate refers to situations where the surface is owned by a private or other nonfederal party while the federal government owns the subsurface minerals and so holds the rights to lease the minerals for oil and gas development. A report to Congress was submitted in December 2006 with recommendations as to how the BLM should modify its procedures. The report documents the findings resulting from consultation on the split estate issue with affected private surface owners, the oil and gas industry, and other interested parties. The BLM issued IM 2007-165 to address implementation of recommendations for several of the issues contained in the Split Estate Report to Congress. The implementation action items important to the Lewistown RMP are designed to increase notice to, and involvement of, private surface owners in the BLM land use planning process with the help of cooperating agencies or local governments.

Also, in addition to this, numerous lands have been placed off limits to oil and gas leasing along lands adjacent to the Rocky Mountain Front identified as the Minerals Withdrawal Area (Baucus bill). This action effectively removed 92, 838 acres from the oil and gas leasing program.

The planning area currently has a high fluid minerals program activity with high leasing, exploration, and development interests. There are active oil and gas leases across the planning area which creates a pressing need for new inventories and revised data. This information is needed prior to designing lease stipulations and resolving split estate issues.

The BLM-administered lands in the RMP area that fall under the jurisdiction of the 1994 *JVP RMP* are currently closed to leasing until the completion of the Lewistown RMP because of the March 31, 2004, judgment; however, operators in that area are currently being allowed to develop their existing leases in accordance with the existing lease terms and any mitigation measures prescribed at the time of application for permit to drill (APD) approval. Oil and gas leasing continues to occur on BLM-administered lands on a very limited basis in the RMP area that falls under the jurisdiction of the 1994 *JVP RMP*.

The Great Falls Oil and Gas Field Office, in conjunction with other field offices, conduct onsite inspections to identify environmental concerns and to develop mitigation measures prior to issuing an approval of an APD. Enforcement action is taken in cases where operations are not being conducted within these guidelines or regulations.

4.1.13.3 Nonenergy Solid Leasables

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The BLM will allow exploration and development of solid mineral resources (other than coal and oil shale) as authorized under the 1920 and 1947 Mineral Leasing Acts. Prospecting permits will be available for all land not closed to mineral leasing in conformance with 43 CFR 3500.	Yes	If warranted, BLM has the authority to close areas to nonenergy exploration and development to protect other resources.	Adjust or revoke current closures or identify areas of potential impact and close from nonenergy leasing.

4.1.13.4 Locatable Minerals

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
All federal minerals are available for exploration and development unless withdrawn.	Yes	The only authority the federal government has to close areas to mineral location is through withdrawal in conformance with the 1872 Mining Law, as amended.	Options for change would include adjusting or revoking current withdrawals or proposing new withdrawals.
A notice is screened for impacts that constitute unnecessary or undue degradation. Processing a	Yes	“Preventing unnecessary or undue degradation” is set forth through FLPMA and 43 CFR 3809.	Through planning, potential impacts to specific resources can be identified and BMPs

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
notice is not a federal action and there is no formal environmental process.			can be developed to mitigate those impacts.
When a plan of operations is filed with the BLM, the proposed action is analyzed and those mitigating measures needed to prevent unnecessary or undue degradation are required for approval.	Yes	"Preventing unnecessary or undue degradation" is set forth through FLPMA and 43 CFR 3809.	Through planning, potential impacts to specific resources can be identified and BMPs can be developed to mitigate those impacts.

4.1.13.5 Salable Minerals

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
All lands not withdrawn are available for mineral material disposal. Mineral material permits are considered on a case-by-case basis and issued at the discretion of the Area Manager.	Yes	The BLM has the authority to close areas to mineral materials development.	Options for change would include adjusting or revoking current withdrawals or proposing new withdrawals.
The BLM will issue sales contracts for mineral materials where disposal is deemed to be in the public interest, while providing for reclamation of mined lands and preventing unnecessary or undue impact to nonmineral resources.	Yes	"Preventing unnecessary or undue degradation" is set forth through FLPMA.	Through planning, potential impacts to specific resources can be identified and RFDs can be developed to mitigate those impacts.
The BLM will continue meeting the demand of local governments for sand and gravel needed for road surfacing and maintenance.	Yes	In conformance with 43 CFR 3600, BLM can issue free use permits to government and nonprofit entities.	

4.1.14 Livestock Grazing

Since the implementation of the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota* (S&Gs) in 1997, management practices for livestock grazing have been focused on achieving land health standards and meeting objectives for other resources (for example, vegetation and soils) established for allotments. This has been accomplished by better conformance with the guidelines for livestock management, such as changing the duration of grazing use, season-of-use, reducing animal units, and improving grazing distribution. Reducing the duration of grazing use and improving livestock distribution are generally the keys to meeting rangeland objectives, particularly those associated with riparian areas. Grazing management has been improved by a variety of actions, such as adjustments in grazing permits (including the addition of terms and conditions designed to maintain or improve riparian zones and wetlands, utilization and trampling limits, herding and riding requirements, and placing salt and supplemental feed away from riparian zones), construction of water developments and pasture fencing, and ensuring compliance with maintenance of range improvements and grazing permits.

Adequacy of Current Rangeland Management Direction and Options for Change

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
AMP Development	Yes and No	The AMPs require extensive time and labor to develop. Staff reductions have decreased the ability to keep up with the planned number of new and revised AMPs.	In most cases, develop allotment-specific activity plans that are implemented on the ground at the time the permit is renewed, or through the transfer process.
AUM Allocation	No	Land tenure exchanges, drought, sensitive species habitat requirements, and wildfire have reduced the available forage base in the planning area.	Re-evaluate livestock carrying capacity on an allotment-by-allotment basis, based on new and emerging issues. Make adjustments in allocation (permitted use) where necessary.
Range Improvements	No	Allotment-specific improvement planning at the RMP level is difficult to implement. Additionally, annual budget fluctuations and staffing hinder the ability to develop and implement project work.	Develop projects that will improve the likelihood of success of new or revised activity plans.
Reserve Allotments	No	Increasing focus on overall land health, fire management, drought, and	Evaluate and develop a plan that will allow the field office to create a

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		other unforeseen natural events have increased the need for reserve common allotments.	reserve common allotment when the opportunity presents itself.

4.1.15 Recreation and Visitor Services

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Recreation Management Area designation.	No	Consider Durfee Hills area for designation as a SRMA. Recreation issues have increased due to fix-winged and helicopter activity in a landlocked area. Consider Crystal Cave SRMA. Recreational resource opportunity awareness.	Review current SRMAs to see if changes need to be made. Consider Durfee Hills for designation as a SRMA to protect the resources while providing for the unique hunting experience in this landlocked location via fixed-winged aircrafts and helicopters. With the increased use, clear direction needs to be created for the area in order to protect the resources. All remaining portions of the planning area are designated as either an extensive recreation management areas (ERMAs) or public lands not designated as recreation management areas (LNDs).
Activity plans will be developed for all SRMAs (<i>JVP</i> , p. 23).	Yes	Activity plans have not been developed for all SRMAs.	Implement this decision.
Support dispersed recreation (<i>JVP</i> , p. 22).	Yes	Support local, regional, and national needs. The BLM	Working with communities and the

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		will not construct undeveloped or developed recreation sites based strictly on local use, unless these sites can be realized through partnerships. Working with communities to manage at a landscape level will determine which recreation activities to support.	public will enable BLM to adjust its management practices as necessary to make sure the values that contribute to the outcomes most desired by the public receive priority and that the agency effectively retains the public lands for the long-term needs of future generations (as envisioned in FLPMA, Section 103c). The BLM will continue to preserve, reserve, and enhance the unique resource values; ensure the continued provision of primitive, unconfined recreation experiences and outstanding opportunities for solitude; and mitigate recreation resource/use conflicts within the planning area.
		Better understanding of knowing what to manage for in the area.	Evaluate and classify recreational resources using the Recreation Opportunity Spectrum system based on physical, social, and administrative attributes.
			Protect the geologic feature, Square Butte WSA, since this major feature can be seen for miles and it is of considerable historic significance.

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Signs, maps, and brochures will be created to identify recreation resources for the public (<i>JVP</i> , p. 22).	Partly	Signs promote awareness of the area and safety. Priority given to areas of intensive use. Additional areas may be needed.	Additional directional and interpretive signs will be installed to facilitate use in the following areas: • Major travel routes • New access routes or points • BMAs • SRMAs • ACECs
Managing visitor services, including a permit system. All BLM land is available at the discretion of the area manager as long as permittees maintain a special use permit and meet BLM regulation requirements (<i>JVP</i> , p. 22).	Yes	Special Recreation Permit activities, especially outfitter/guide hunting/fishing, are popular in the resource area.	SRPs will be evaluated on a case-by-case basis to establish future commercial use limitations and related policies based on established monitoring criteria and regulatory directives.
		There has been a small demand for designated campsites near the Lewistown area.	Potential developed campsites with designated campsites and facilities could incur a fee system in the future. Casual use of the BLM-administered public land for hiking, bicycling, hunting, fishing, and similar uses are allowed without charge. Dispersed camping is generally allowed on BLM lands in Montana for no more than 16 days in a 30-day time period. After this time period, relocation to another site at least ½ mile away.

4.1.16 Travel, Transportation Management, and Access

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
No motorized wheeled cross-country travel (<i>OHV FEIS ROD</i> , p. 1). BLM will restrict ORV use to designated roads and trails (<i>JVP</i> , p. 86).	Yes	None	None
		Motorized and nonmotorized travel technology and use have increased the public's ability to traverse conditions and terrains not previously envisioned.	There is a need to adequately address impacts of motorized travel or increased conflict between motorized and nonmotorized users, particularly at urban/rural interfaces.
		Travel management plans need to be completed to ensure public access for both motorized and nonmotorized recreation opportunities, as well as to minimize resource impacts.	Travel management planning for all travel management areas (TMAs) in the planning area.

4.1.17 Lands and Realty

This section discusses various lands and realty actions which include rights-of-way (ROWS) transportation facilities, land tenure, and utility corridors/communication sites.

4.1.17.1 Land Use Authorizations

Rights-of-Way (ROWs)

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Land actions constitute resource allocations and, as such, are made through a variety of means. They are generally use authorizations (primarily ROWs and 2920 permits). Each proposal or application for a lands action is considered on a case-by-case basis and is either authorized or rejected. The primary objective for the planning area lands and realty program is to manage the use of public lands to meet the needs of internal and external customers and to preserve important resource values.	Yes	Many of the management decisions related to lands and realty in the planning area can be categorized as being driven by growth and urbanization and the interface between private landowners and the demand for public lands needed for the facilities (e.g., access roads, electric power lines, telephone lines, oil and gas pipelines, and communication sites).	<u>Rights-of-way that facilitate the development of subdivisions.</u> Rights-of-way must be in conformance with all federal, state, and local laws, but the current planning documents do not specifically discuss development of subdivision access roads across public lands. Cooperating agencies, including county commissioners and county planners, should be involved as opportunities or alternatives are considered for the revised RMP.

4.1.17.2 Land Tenure

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The primary objective for the planning area land tenure program is to manage the acquisition, disposal, and withdrawal of public lands to meet the needs of internal and external customers and to preserve important resource values.	No	Although land exchanges and other land tenure adjustment actions completed by the LFO conform with the current plans (<i>JVP RMP</i> and <i>Headwaters RMP</i>), there has been recent interest for BLM to retain public land and/or improve access to public land, as these lands often provide open space if they are surrounded by private lands. Land tenure adjustments in the LFO will be reviewed on a case-by-case basis and include community involvement through a public scoping process.	Management opportunities for land tenure adjustment are entirely dependent on having a willing seller, available staffing, and funding.

4.1.17.3 Utility Corridors and Communication Sites

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Long-term occupancy of the public lands for roads, power lines, pipelines, communication sites, and irrigation ditches is authorized by granting a ROW. Rights-of-way facilities are to be removed and reclaimed upon termination of the grant.	Yes	None.	None.
Transmission lines and transportation facilities are located to the extent feasible within identified corridor areas.	No	None.	It may be necessary to determine some corridor development, but scattered land ownership patterns can

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Communication sites are authorized for only two sites within the planning area, Judith Peak and South Moccasin Mountains. The remainder of the planning area is open for ROW development.			make that difficult.
Locate transmission and transportation facilities within the corridor areas, when possible.	Yes/No	The lack of corridors within the planning area requires frequent location outside of any such corridor.	It may be necessary to determine some corridor development, but scattered land ownership patterns can make that difficult.
Locate communication sites and utilities in the planning area only within existing communication site locations.	Yes	Communication site locations are currently well established and have individual communication site management plans in place for current and future management of the site.	While it appears that the two existing sites are adequate for local use and planning, we have had mention of another possible site location suggestion near the Highwood Mountains or in the western part of the planning area. However, scattered land ownership patterns often make this difficult and folks are locating sites on private land.

4.1.18 Renewable Energy

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
No management decisions issued relating to renewable energy.	No	While renewable energy is a growing industry and the planning area does show potential in some areas, industry has not expressed interest in further	- Identify open, avoidance, and exclusion areas for wind. - Identify any BLM lands exhibiting good

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
		developing that renewable energy source at this time.	wind resources (Class 4 and above) that lie within areas with few constraints as available for potential competitive wind leasing.

4.1.19 Withdrawals

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Applications for withdrawals for surface and/or minerals will be considered on a case-by-case basis.	Yes	None.	None.

4.1.20 Forest, Woodland, and Special Products

Ability of Current Management Direction to Achieve Desired Conditions and Address Resource Demands

While the BLM continues to manage forests on public lands under the principles of multiple use and sustained yield as required by FLPMA, these principles have taken on a different interpretation from when the *Headwaters* and *JVP RMPs* were released. The forest management sections of the *Headwaters RMP* (BLM, 1984) and the *JVP RMP* (BLM, 1994) focus on the sustained-yield component, which was the emphasis at that time. While the concept of sustained yield is still an important component of the forestry program, there is more emphasis placed on managing forest health and fuels reduction for the benefit of all resources. This type of management results in restoring forests to some form of desired future condition with a future range of variability, with timber production being a by-product. As a result, this current planning effort needs to include decisions that address this new emphasis in forest and woodland management.

Issues

- Demand for forest products is variable and unreliable. Sales of forest products should be coordinated to address forest health issues.
- Requests generally come from adjacent landowners or logging operators who are interested in sawlog and/or firewood harvest. The need for, and type of, treatment for forest health issues

should be identified and prioritized irrespective of public requests; however, treatments should be coordinated with the public requests.

- Identify areas where the sale of minor forest products is prohibited, including: WSAs, campgrounds, and riparian areas.

Options for Change	
• Change is needed to prioritize areas based on forest health issues and needs. The driving force for commercial sale of forest products should be for the treatment of forest health issues. Attempts should be made to accommodate public requests. • Set the minimum requirements for timber management actions. Actions include road construction, slash disposal, and placement, etc. • Set the minimum requirements and restrictions for road construction, rehabilitation, and location. Roads constructed for timber harvests should be constructed to minimum standards necessary to remove timber. • Fuel treatment projects should be developed in conjunction with forest resources and should address forest health issues as well as fire issues. Commercial sales of wood products should be included in fuels treatments where possible. • Options for use of woodland products and biomass industries should be explored.	

SPECIAL DESIGNATIONS

4.1.21 Areas of Critical Environmental Concern (ACECs)

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
<i>Headwaters Resource Area RMP</i>	No ACECs designated within the planning area.		Re-evaluate relevance and importance criteria for Rocky Mountain Front ONAs.
<i>Judith Resource Area RMP</i>	Identifies four ACECs and specifies that activity plans will be prepared for each. Judith Mountains Scenic ACEC: scenic, wildlife, and recreational	Activity plans have not been drafted for any of the ACECs.	Evaluate impact of conifer encroachment and litter accumulation with regard to current management action. Evaluate impacts of road proliferation.

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	values in the Judith Mountains. Managed to mitigate impacts to resources from surface-disturbing activities; off-road travel restricted yearlong to designated roads and trails; avoidance area for ROWs; available for restricted management of forest products; open to mineral entry. Acid Shale-Pine Forest ACEC: a research natural area with an endemic plant community unique to the area and a fragile watershed. Allow research at War Horse unit and		Evaluate role of fire and

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	maintain Briggs Coulee as a control site. Open to mineral entry; disposal of forest products from the area will be prohibited (unless necessary for stand preservation); receives intensive wildfire suppression; ORV use restricted yearlong to designated roads and trails. Square Butte Outstanding Natural Area ACEC: established to protect natural endemic systems, cultural sites, scenic qualities, rare geologic features unique to Montana, and to identify key wildlife		mechanical treatments. Expand the boundaries of the ACEC; land donation has expanded the public land component of the Square Butte ACEC. Legal access has not been obtained.

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	viewing sites under the watchable wildlife program. Managed for wildlife, cultural resources, and recreation; segregated from the mining and leasing laws by a classification under the authority of the Classification and Multiple-Use Act of 1964 (CMU). The BLM will pursue a protective withdrawal for Square Butte to segregate this area from mining claim location to protect natural endemic systems, cultural sites, scenic qualities, and rare geologic features unique to		

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	Montana. The classification will be terminated when the area is withdrawn. Legal access will be pursued to the ACEC for a trailhead as well as a trail network to the butte. The area will be closed to off-road vehicles. Surface-disturbing activities will be prohibited, including transmission lines, roads, communication sites, pipelines, etc. Recreation and habitat direction for the area will include a trail system, camping areas, a recreation use policy, and habitat management direction for wildlife populations		

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	including prescribed fire, security areas, etc. The sale of forest products will be prohibited, unless necessary for stand preservation. Collar Gulch ACEC: established to protect a pure strain of westslope cutthroat trout, a MFWP state species of special concern. Emphasis is wildlife habitat protection and improvement for the westslope cutthroat trout population with some nonmotorized recreational use. Area closed to motorized vehicles (except for	Road into Collar Gulch gated, minimizing motorized vehicle access; stream enhancement structures installed.	Current boundary does not follow watershed boundaries. Some areas of acid runoff are present within watershed of Collar Gulch ACEC.

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	the main Judith Peak Road and connected Big Grassy Peak and Crystal Peak/Collar Ridge access roads). Additional public access to the area will not be pursued to protect natural resource values. Initiate stream protection and enhancement structures. Initiate a study to identify the source of water quality degradation in the drainage and develop appropriate measures to eliminate or mitigate the degrading source. The BLM will implement a nondegradation policy for the waters in Collar Gulch		

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	Creek to protect the resident population of westslope cutthroat trout. Variances will be provided for individual operations only after application of best reasonably available control technology; and only to the extent that it will not impact the trout population. The BLM will initiate a routine water quality monitoring program in the drainage to establish baseline conditions. Withdrawal of surface or groundwater will be restricted when the flow in Collar Gulch Creek drops below 3 cfs		

Decision Source	Current Management Decision	Remarks (Rationale)	Options for Change
	measured at the point where the creek enters private land in T. 17 N., R. 20 E., Section 32: SE1/4NW1/4. Concurrent reclamation will be emphasized, thereby reducing erosion and sedimentation potential. Surface-disturbing activities will be designed to minimize impacts to the Collar Peak Trail. Surface-disturbing activities will be designed to avoid impact to the Tate-Poetter Cave resources.		

4.1.22 Back Country Byways

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
No management decisions issued relating to national back country byways.	N/A	N/A	N/A

4.1.23 National Trails

When surface-disturbing activities, such as energy development, fuels reduction projects, range improvements, and recreation site development threaten national historic trails, the cultural resources program provides support by evaluating cultural resource sites through Section 106 consultation. Relying on the reactive nature of Section 106 preserves resources from direct effects but also results in the decline of cultural sites associated with the national historic trails due to natural deterioration, incidental damage, and vandalism. Additionally, there have been policy changes in the BLM's national historic and scenic trail administration and the cultural resource management program since completion of the *Judith and Headwaters RMPs*. Management guidance contained in BLM Manuals 6250 and 8130.13 is not present in the 1984 *RMP*.

Issues

- Manual direction requires the BLM to implement federal trail data standards and provide geospatial and tabular data stewardship and support.
- In order to complete the required national trail right-of-way for the trailwide comprehensive plan, a viewshed analysis should be completed.
- The increased emphasis on domestic energy development, both renewable and nonrenewable, and the role that resources on public land as well as split estate may play, is leading to potential conflicts between energy development and values placed on national historic and scenic trails.
- Effects (perceived or real) of travel management decisions on the integrity of national historic trails is being scrutinized more closely, necessitating increased inventory and understanding of the national significance of these Congressionally-designated trails.
- National historic trails have not been inventoried and mapped in a manner that allows them to be identified through cultural resource records searches in the Montana site database; the trails do not show up on records searches as resources when contractors prepare to complete cultural resource clearances for undertakings.

Options for Change	
• Participate in comprehensive plan updates for the Lewis and Clark and Nez Perce National Historic Trails (NHTs), and the Continental Divide National Scenic Trail (CDNST) led by the responsible lead agencies (National Park Service[NPS] and Forest Service [FS], respectively). • Protect trails by developing and implementing additional stipulations on all new ground-disturbing activities based on assigned use categories to enhance cultural resource management decisions to protect cultural resources. • Assist in cooperative effort for alignment, designation, construction, and management of the Lewis and Clark and Nez Perce NHTs, and the CDNST. • Continue working with partners on research, interpretation, preservation, and education projects (i.e., universities/colleges, local schools, museums, historical associations). • Provide the public opportunities to be involved in historic preservation, including site monitoring, preservation, and recreation (i.e., Montana Site Stewardship Program, self-guided tours). • Continue consultation with Native American tribes to help redevelop ties to the landscape, and identify and protect sacred and traditional use areas. • Adapt the trail 'zone' concept (incorporating the line designated by Congress with a viewshed buffer) to ensure consistent management within the field office. Incorporate a 0.25 no surface occupancy stipulation for trails, and 3-mile viewshed to ensure consistent management within the Montana BLM. • Engage the Nez Perce Trail Foundation in partnering for identification and interpretive activities. • Consider acquiring high priority sites within the defined trail corridors with Land and Water Conservation Fund Act of 1974 (LWCF) funds.	

4.1.24 Wild and Scenic Rivers (WSRs)

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The BLM reviewed 39 rivers and streams within the Judith planning area and concluded that the Ming Coulee to Anderson Bridge segment of the Judith River was determined to be eligible for inclusion in the wild and scenic rivers system; however, this segment was determined to be unsuitable due manageability issues.		Documentation does not exist. New conditions affecting outstandingly remarkable values may be present.	
No planning decisions exist for lands within the Headwaters planning area.	No	A wild and scenic rivers eligibility report was completed for the Headwaters area in 2010.	Evaluate 18 eligible segments for suitability.

4.1.25 Wilderness Study Areas (WSAs)

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
Originally, North Fork Sun River and Beaver Meadows WSAs were removed from the <i>Headwaters RMP</i> . Due to litigation, they were placed under the wilderness interim policy and needed to be researched.	No	From the research conducted in 1988, it was determined that both were nonsuitable for wilderness designation.	Re-evaluate current designations for North Fork Sun River WSA and Beaver Meadows WSA.
	Yes	To provide safe and legal access to the WSA for use by the public. Activity plan will be required in response to issues that may arise once legal access has been granted. An increase in visitors may have an impact.	Provide legal access to Square Butte WSA by existing roads. Complete an activity plan for Square Butte.
	No	North Fork Sun River and Beaver Meadows were included in the September 1991 Montana Statewide Wilderness Study Report Volume II. Also, Square Butte was included in the Statewide Wilderness Report as an instant study area that was recommended for nonwilderness.	Re-evaluate current designations for North Fork Sun River WSA and Beaver Meadows WSA. Continue to manage Square Butte as a WSA, unless acted upon by Congress. North Fork Sun River (196 acres) Beaver Meadows (595 acres) Square Butte (1,947 acres)

4.1.26 Outstanding Natural Areas (ONAs)

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
The <i>Headwaters ROD</i> (1984) designated Blind Horse, Ear Mountain, Chute Mountain, and Deep Creek/Battle Creek Outstanding Natural Areas.	Partially		The ONAs need to be re-evaluated for relevance and importance criteria.

SOCIAL AND ECONOMIC

4.1.27 Social and Economic Conditions

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
N/A	No	No current objectives and decisions for social and economic conditions are included in the existing RMPs.	Management actions on public lands can have a profound impact on social conditions. Consider impacts.

4.1.28 Treaty Rights and Tribal Interests

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
N/A	No	No current objectives and decisions for tribal treaty rights are included in the existing RMPs.	

4.1.29 Environmental Justice

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
N/A	No	No current objectives and decisions for environmental justice are included in the existing RMPs.	

4.1.30 Public Safety

Planning Decision	Is Decision Responsive to Current Issues?	Remarks (Rationale)	Options for Change
N/A	No	No current objectives and decisions for public safety are included in the existing RMPs. Other management actions for other resources, such as fire or recreation, address public safety as a part of those programs.	

CHAPTER 5
CONSISTENCY/COORDINATION WITH OTHER
PLANS

According to guidance found in the Federal Land Policy and Management Act of 1976 (FLPMA) (43 CFR 1610), Bureau of Land Management (BLM) resource management plans (RMPs) and amendments must be consistent, to the extent practical, with officially approved or adopted resource-related plans of other federal, state, local, and tribal governments so long as the guidance and RMPs are also consistent. The BLM RMPs must also be consistent with the purposes, policies, and programs of FLPMA and other federal laws and regulations related to public lands, including federal and state pollution control laws (see 43 CFR 1610.3-2 [a]). If these other entities do not have officially approved or adopted resource-related plans, then the BLM RMPs must, to the extent practical, be consistent with those entities' officially approved and adopted resource-related policies and programs. This consistency will be accomplished so long as the BLM RMPs incorporate the policies, programs, and provisions of public land laws and regulations, and federal and state pollution control laws (see 43 CFR 1610.3-2 [b]).

Before the BLM State Director approves RMP decisions, the Montana Governor has 60 days to identify inconsistencies between the proposed plan and state plans and programs, and to provide written comments to the BLM State Director. The BLM and the state may mutually agree on a shorter review period. If the Governor does not respond within this period, it is assumed that the proposed RMP decisions are consistent. If the Governor recommends changes in the proposed plan or amendment that were not raised during the public participation process, the State Director shall provide the public with an opportunity to comment on the recommendations (see 43 CFR 1610.3-2 [e]). This public comment opportunity will be offered for 30 days and may coincide with the 30-day comment period for the notice of significant change. If the State Director does not accept the Governor's recommendations, the Governor has 30 days to appeal in writing to the BLM Director (see 43 CFR 1610.3-2 [e]).

County, state, and other federal agency plans for neighboring areas or cross-jurisdictional purposes are discussed further in the following sections and should be consulted, as applicable, during RMP development.

5.1 CITY/COUNTY PLANS

The planning area encompasses BLM surface- and subsurface-administered resources in portions of Fergus, Meagher, Petroleum, Chouteau, Judith Basin, Teton, Pondera, Cascade, and Lewis and Clark Counties.

The BLM is conducting a consistency review of existing city and county land use plans (LUPs). The county plans or growth plans/policies that have been identified to be reviewed for consistency at the time of this report include:

- Cascade County Growth Policy (2006)
- Draft Cascade County Growth Policy Update (January 2014)
- Chouteau County Development Regulation (Revised 1997)
- Chouteau County Growth Policy Plan (2004)
- Comprehensive Economic Development Strategy, North Central Montana Economic Development District, Inc. (EDDI), North Central Montana EDDI (2006)
- Lewis and Clark County Growth Policy (2004)
- Pondera County, City of Conrad and Town of Valier Planning and Growth Policy (in developmental stages)
- Teton County Growth Policy Plan (2003)

Other community assessments and plans were reviewed to capture local/regional concerns and for consistency purposes, including:

- Town of Cascade Growth Policy (2011)
- City of Choteau Growth Policy (2009)
- City of Great Falls Growth Policy Update (2013)
- City of Helena Growth Plan (2011)
- Comprehensive Plan White Sulphur Springs – Meagher County, Montana (1981)
- Draft Valier Growth Policy (April 2011)
- Lewistown, Montana Growth Policy – Final (2006)

Community wildfire protection plans (CWPPs) inventoried include:

- Cascade County – dated April 2008
- Chouteau County – dated November 2007
- Fergus County – dated September 15, 2004
- Judith Basin County – dated September 14, 2004
- Meagher County – dated October 2007 (currently being revised)
- Petroleum County – dated September 7, 2004
- Pondera County – dated May 14, 2007
- Teton County – dated June 9, 2005, revised June 2011

Pre-disaster mitigation plans (PDMs) that were inventoried include:

- Cascade County – dated September 2011
- Chouteau County – dated 2010
- Fergus County – dated September 2007
- Judith Basin County – dated August 2007 (revision started October 2013)
- Meagher County – no PDM plan
- Petroleum County – dated July 2008
- Pondera County – dated November 2011
- Teton County – dated June 9, 2005

5.2 STATE PLANS

A number of planning documents, strategies, or policies that guide management activities affect public lands. Many of the plans directly impact or otherwise affect BLM-administered public lands, agreements, or other partnership involvement opportunities. In addition to BLM's cooperating agency relationship with several state agencies (see Cooperating Agencies Section below), ongoing coordination and communication will take place to ensure consistency, as appropriate. State plans most pertinent to the planning area are listed below. The BLM resource specialists reviewed many of these plans and determined that, to the extent possible, they are consistent with current management of BLM public lands.

- Air Pollution State Implementation Plan (Montana Department of Environmental Quality [MDEQ])
- Montana's Comprehensive Fish and Wildlife Conservation Strategy Statewide Habitat Plan (Montana Department of Fish, Wildlife and Parks [MFWP], 2005)
- Management Plan and Conservation Strategies for Greater Sage-grouse in Montana – Final (Montana Sage-Grouse Working Group, 2005)
- Montana Statewide Elk Management Plan (MFWP, 2004)
- *Conservation Plan for Black-Tailed and White-Tailed Prairie Dogs in Montana* (Montana Prairie Dog Working Group, 2002)
- *Montana Bald Eagle Management Plan*, 2nd ed. (Montana Bald Eagle Working Group, 1994)
- Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan (1994)
- *Montana Gray Wolf Conservation and Management Plan* (MFWP, 2003)
- *Montana Gray Wolf Conservation and Management Plan – Amended Record of Decision* (May 2004)
- Northern Continental Divide Ecosystem (NCDE) Grizzly Bear Conservation Strategy Draft (2013)
- Montana's State Wildlife Action Plan Draft (MFWP, 2014)
- Montana Tourism and Recreation Strategic Plan (2013-2017)
- *Montana Aquatic Nuisance Species Management Plan Draft* (2002)
- *The Montana Weed Management Plan (Montana Noxious Weed Summit Advisory Council Weed Management Task Force* (revised May 2008)
- *Montana Nonpoint Source Management Plan* (MDEQ, 2012)
- 2010 Update to the State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment (being revised November 2013)
- Preserving Montana: The Montana Historic Preservation Plan, 2013-2017 (2013)
- Approved TMDL Planning Area Documents which currently consist of Judith Mountains, Lower Musselshell, Big Springs, Belt, Teton, Sun, Dearborn, and Missouri-Cascade. Consistency will also be evaluated for all future approved TMDL documents or watershed plans within the planning area.
- Priceless Resources: A Strategic Framework for Wetland and Riparian Area Conservation and Restoration 2013 – 2017
- Montana's State Water Plan 1987 – 2003 (Montana Department of Natural Resources and Conservation [DNRC])
- State of Montana Department of Transportation Statewide Transportation Improvement Program – Final (May 2013), http://www.mdt.mt.gov/publications/docs/stip/2013stip_final.pdf

5.3 OTHER FEDERAL AGENCY PLANS

- *Upper Missouri River Breaks National Monument Record of Decision and Approved Resource Management Plan* (United States [US] Department of the Interior [DOI], BLM, December 2008)
- *Final Environmental Assessment, FONSI and Selected Alternative for the Special Area Management Plan (SAMP) Upper Yellowstone River, Montana* (US Army Corps of Engineers [CE], 2011)
- *Lewis and Clark National Forest Plan* (ROD 1986)
- *Helena National Forest Plan* (US Department of Agriculture [USDA], Forest Service [FS], 1986)
- *Helena National Forest Plan Amendments 1-23* (July 2004)
- Blackfeet Comprehensive Plan (Blackfeet Planning Department 1984)
- *Comprehensive Conservation Plan: Charles M. Russell National Wildlife Refuge, UL Bend National Wildlife Refuge* (US DOI, Fish and Wildlife Service [FWS], 2012)
- *Pallid Sturgeon Recovery Plan* (US DOI, FWS, 1993)

- *Lewis and Clark National Historic Trail Comprehensive Plan for Management and Use* (US DOI, National Park Service [NPS], 1982)
- *Nez Perce Continental Divide National Scenic Trail Comprehensive Plan* (USDA, FS, 2009)
http://www.fs.fed.us/cdt/main/cdnst_comprehensive_plan_final_092809.pdf

5.4 COOPERATING AGENCIES

A cooperating agency is any federal, state, or local government agency, or Indian tribe that enters into a formal agreement with the lead federal agency to help develop an environmental analysis. More specifically, cooperating agencies “work with the BLM, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks” (BLM Land Use Planning Handbook H-1601-1).

The benefits of enhanced collaboration among agencies in preparing National Environmental Policy Act of 1969 (NEPA) analyses include:

- Disclosing relevant information early in the analytical process;
- Applying available technical expertise and staff support;
- Avoiding duplication with other federal, state, tribal, and local procedures; and
- Establishing a mechanism for addressing intergovernmental issues.

On August 16, 2013, the Lewistown Field Office (LFO) sent 62 letters to local, state, federal, and tribal representatives, inviting them to participate as cooperating agencies for the Lewistown RMP as well as inviting them to participate in Planning Concepts Training. As of February 5, 2014, 10 agencies had agreed to participate as a cooperating agency for the RMP (Table 5-1) and 8 have entered into memorandum of understanding (MOU) agreements with LFO.

Table 5-1
Cooperating Agency Participation (as of January 2014)

Last Name	First Name	Agency/Organization	Accepted	Declined	Did Not Respond
Hagener	Jeff	Montana Fish, Wildlife and Parks (MFWP)			X
		Montana Fish, Wildlife and Parks Region 4			X
Smith/Smith	Sonja/Clint	Montana Fish Wildlife and Parks; Lewistown Area Office	X		
		Bureau of Indian Affairs (BIA); Rocky Mountain Regional Office			X
Esplin	Brent	Bureau of Reclamation; Montana Area Office; Great Plains Region			X
Wilson	Mark	US Fish and Wildlife Service (FWS)			X
Potts	Rick	US Fish and Wildlife Service (FWS), Charles M. Russell National Wildlife Refuge	X		
Rooney	Clive	Department of Natural Resources and Conservation (DNRC); Northeastern Land Office	X		
Avey	Bill	US Forest Service (FS); Lewis and Clark National Forest			X

Last Name	First Name	Agency/Organization	Accepted	Declined	Did Not Respond
Bilbo	Keri	USDA Natural Resources Conservation Service (NRCS); Bozeman Area Office		X	
Malvitz	Julie	USDA NRCS; Great Falls Area Office			X
Platt	Amy	US Environmental Protection Agency (EPA) Region 8		X	
		US EPA Montana Operations			X
Baumler	Mark	Montana State Historic Preservation Office (SHPO)		X	
		Chouteau County Commission			X
Youngbauer / Seilstad	Sandra / Carl	Fergus County Commission	X		
		Meagher County Commission			X
Dellwo	Joe	Teton County Commission		X	
Broesder	Sandra	Pondera County Commission	X		
Hughes	Tucker	Judith Basin County Commission	X		
Bryson	Eric	Lewis and Clark County Commission	X		
Ahlgren / Gershmel / King	Larry "Skip" / Gary / Chris	Petroleum County Commission	X		
		Cascade County Commission			X
Whitney	Cathy	Indian Butte Cooperative State Grazing District (CSGD)	X		
Sluggett	Carol	Crooked Creek CSGD		X	
Iverson	Lee	Chain Buttes CSGD			X
Ahlgren	John	Grass Range and Flatwillow CSGDs			X
Lund	Raye Anne	Winnett CSGD			X
Shaw	Jolene	Williams Coulee CSGD			X
Hill	Delores	Weede CSGD			X
		Montana Association of Conservation Districts			X
Stone-Manning (Responder: Lovelace)	Tracy (Bonnie)	Montana Department of Environmental Quality (MDEQ)		X	
Warren	Greg	Continental Divide National Scenic Trail		X	
McFarland	Sandi	Nez Perce National Historic Trail			X
Molzahn	Julie	Nez Perce National Historic Trail			X
		Montana Department of Agriculture			X

Last Name	First Name	Agency/Organization	Accepted	Declined	Did Not Respond
Whitman	Silas	Nez Perce Tribal Executive Committee			X
Pinkham	Josiah	Nez Perce Tribe			X
Baird	Keith "Pat"	Nez Perce Tribe			X
Sharp Jr.	Willie	Blackfeet Tribal Business Council			X
Murray	John	Blackfeet Nation			X
Morsette	Richard "Rick"	Chippewa Cree Tribe			X
Windy Boy, Sr.	Alvin	Chippewa Cree Tribe			X
Durglo	Joe	Confederated Salish and Kootenai Tribes			X
Caye	Arlene	Confederated Salish and Kootenai Tribes			X
Matt	Ira	Confederated Salish and Kootenai Tribes			X
Old Coyote	Darrin	Crow Tribe			X
Bull Chief	Emerson	Crow Tribe			X
Big Day	William	Crow Tribe			X
Azure (Responder: Allen, Jr.)	Mark L. (John A.)	Fort Belknap Indian Community – Buffalo Chaser Society	X		
Belgard	Morris	Fort Belknap Indian Community			X
Nez Perce	Ina	Fort Belknap Indian Community			X
Azure	Floyd	Fort Peck Tribes			X
Youpee	Curley	Fort Peck Tribes			X
Gray	Gerald	Little Shell Tribe			X
Russell	Winfield	Northern Cheyenne Tribe			X
Fisher	Conrad	Northern Cheyenne Tribe			X
Small (Responder: Davis)	Nathan (Cleve)	Shoshone-Bannock Tribes		X	
Tuell	Yvette	Shoshone-Bannock Tribes			X
Boyer-Smith	Carolyn	Shoshone-Bannock Tribes			X
Proctor	Jo	Department of Defense			X

Cooperating agencies will be encouraged to attend and/or provide scoping comments, assist LFO with alternatives development, participate in a community economic workshop, and provide review of draft RMP materials. Additional opportunities for cooperation with other agencies will be sought throughout

the RMP and environmental impact statement (EIS) development process. Project phases where state and local governments, other federal agencies, and tribal government are involved will assist in providing consistency with other federal, state, and local plans.

5.5 RESOURCE ADVISORY COUNCIL

A resource advisory council (RAC) is a committee established by the Secretary of the Interior to provide advice or recommendations to BLM management (BLM Land Use Planning Handbook H-1601-1). A RAC is generally composed of 15 members of the public, representing different areas of expertise. As provided for by FLPMA, the DOI established the RAC program in 1995 as a forum for local citizens to provide advice and recommendations to the Department on management of public lands. The RAC members serve a 3-year term, which is staggered among members such that one-third of the membership is subject to appointment in any given year.

The members of the Council serve in an advisory capacity to develop recommendations for the BLM regarding the preparation, amendment, and implementation of land use plans for the public lands and resources within the jurisdiction of the Council.

The Council also advises the BLM in developing recommendations for implementation of ecosystem management concepts, principles, and programs, and assists the BLM in establishing landscape goals and objectives.

The BLM provided the Central Montana RAC an initial presentation on the Preparation Plan for the Lewistown RMP on January 9-10, 2013. During a subsequent RAC meeting on September 18-19, a request was presented to solicit RAC participation as a subcommittee during the course of the Lewistown RMP. The Central Montana RAC did not offer representation from the Council to participate as a subcommittee; however, the Council requested to be informed of progress and issues that require attention by the Council. The LFO will provide regular briefings to the RAC during quarterly meetings to ensure consistency with other local, state, and federal plans.

CHAPTER 6

SPECIFIC MANDATES AND AUTHORITY

The foundation of public lands management is in the mandates and authorities provided in laws, regulations, and executive orders. The Bureau of Land Management's (BLM's) planning process (as described in 43 CFR 1600) is authorized and mandated through two important laws: the Federal Land Policy and Management Act of 1976 (FLPMA) and the National Environmental Policy Act of 1969 (NEPA). In addition to these acts, several other acts, instruction memorandums (IMs), information bulletins (IBs), manuals, and handbooks give direction and authority to the BLM. Following are some of the primary documents that direct the management of public lands and resources.

The Federal Land Policy and Management Act of 1976 states that BLM "shall, with public involvement . . . develop, maintain, and when appropriate, revise land use plans" (43 United States Code [USC] 35 Section 1712[a]). In addition to federal direction for planning, FLPMA declares the policy of the United States (US) concerning the management of federally-owned land administered by BLM. Key to this management policy is the direction that BLM "shall manage the public lands under principles of multiple use and sustained yield, in accordance with the [developed] land use plans" (43 USC 35 Section 1732[a]). The commitment to multiple use will not mean that all land will be open for all uses. Some uses may be excluded on some land to protect specific resource values or uses, as directed by FLPMA (43 USC 35 Sections 1712[c][3]). Any such exclusion, however, will be based on laws or regulations, or be determined through a planning process subject to public involvement. In writing and revising land use plans (LUPs), FLPMA also directs BLM to coordinate land use activities with the planning and management of other federal departments and agencies, state and local governments, and Indian tribes. This coordination, however, is limited "to the extent [the planning and management of other organizations remains] consistent with the laws governing the administration of the public lands" (43 USC 35 Section 1712[c][9]).

In the National Environmental Policy Act of 1969, the Congress directs "all agencies of the Federal Government . . . [to] . . . utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment" (42 USC 55 Section 4332[2][A]). Because the development of a new resource management plan (RMP) may cause impacts to the environment, NEPA regulations require the analysis and disclosure of potential environmental impacts in the form of an environmental impact statement (EIS). The EIS will examine a range of alternatives, including a No Action Alternative, to resolve the issues in question. Alternatives should represent complete, but alternate means of satisfying the identified purpose and need of the EIS and of resolving the issues. The Lewistown RMP is being prepared using the best available information.

In addition to these acts, management of public land and resources is authorized and directed through several specific resource and resource use laws, regulations, and executive orders. The direction from these sources is refined and made Department- and Bureau-specific through agency documents such as IMs, IBs, manuals, and handbooks. Following are some of the documents that direct the management of public land and resources. Chapter 6 also provides a comprehensive list, by program, of the laws, regulations and policies guiding each resource.

6.1 FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND POLICIES THAT APPLY TO ALL RESOURCES AND RESOURCE USES

6.1.1 Federal Laws, Statutes, and Orders

- The National Environmental Policy Act of 1969
- The Federal Land Policy and Management Act of 1976
- Multiple-Use Sustained-Yield Act of 1960 (16 USC 528-531)
- Clean Air Act of 1990, as amended (42 USC 7418)
- Clean Water Act of 1972 (33 USC §1251 et seq.)
- Pollution Prevention Act of 1990
- Environmental Quality Improvement Act, as amended (42 USC 4371 et seq.)
- New Source Review (40 Code of Federal Regulations [CFR] Part 51.307)
- Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978 (43 FR 47707)
- Executive Order 11514, Protection and Enhancement of Environmental Quality, March 5, 1970 (35 FR 4247), as amended by Executive Order 11991, May 24, 1977
- Executive Order 11738, Providing for Administration of the Clean Air Act and the Federal Water Pollution Control Act with Respect to Federal Contracts, September 10, 1973
- Secretarial Order 3226A1, Climate Change Impacts, January 16, 2009
- Executive Order 13514, Federal Leadership in Environmental Energy, and Economic Performance, October 5, 2009
- Executive Order 13653, Preparing the United States for the Impacts of Climate Change, November 1, 2013
- Secretarial Order 3289, Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources, September 14, 2009

6.1.2 Regulations

- Code of Federal Regulations (CFR), Title 43, Public Lands, Department of the Interior (DOI)
- Council on Environmental Quality (CEQ) Regulations of 40 CFR 1500-1508 (provides NEPA regulations)
- 29 CFR 1910 Occupational Safety and Health Standards, special provisions for air contaminants
- 40 CFR 50 National Primary and Secondary Ambient Air Quality Standards

6.1.3 Manuals, Handbooks, and Technical References

- BLM Manual 1600 contains planning guidance
- BLM Handbook H-1601-1 contains planning guidance
- DOI NEPA Manual (516 DM 11) contains NEPA guidance
- BLM NEPA Handbook H-1790-1 provides NEPA guidance
- BLM Manual 7000 Series: Soil, Water, and Air Management
- BLM Manual 7200 Series: Water Resources

6.2 STATE LAWS AND REGULATIONS

- Montana Environmental Policy Act (1971)

Federal, State, and Local Laws, Regulations, and Policies that Apply to Specific Resources and Resource Uses

Management of public land and resources is authorized and directed through several resource and resource use specific laws, regulations, and Executive Orders. The direction from these sources is refined and made Department- and Bureau-specific through agency documents such as IMs, IBs, manuals and handbooks. A comprehensive list of IMs and IBs is not included here because they are often temporary in nature and are likely to expire or be updated prior to completion of the new RMP. Following are some of the documents that direct the management of public land and resources by program area.

AIR RESOURCES AND CLIMATE CHANGE

The US Congress designated the Environmental Protection Agency (EPA) as the regulatory entity for air resources under a framework of environmental laws. The EPA may also delegate regulatory authority to states, tribes, and local agencies. As a federal agency, the BLM is required to work cooperatively with the EPA and the delegated state agency in planning resource development to ensure that applicable air quality standards and regulations are met on public lands.

Federal Laws, Regulations, Statutes, and Orders

- The Clean Air Act, as amended (1990), 42 USC 7418, requires federal agencies to comply with all federal, state, and local requirements regarding the control and abatement of air pollution. This includes abiding by the requirements of state implementation plans. The following sections of the Act apply to this planning process:
 - Applicable NAAQS (Section 109)
 - State Implementation Plans (Section 110)
 - Control of Pollution from Federal Facilities (Section 118)
 - Prevention of Significant Deterioration, including visibility impacts to mandatory federal Class I Areas (Section 160 et seq.)
 - Conformity Analyses and Determinations (Section 176[c])
- Executive Order 12088 (*Federal Compliance with Pollution Control Standards*)
- National Emission Standards for Hazardous Air Pollutants (40 CFR 61)
- Regional Haze Rule (40 CFR 51)
- Regional Haze Regulation (64 *Federal Register* 35714, July 1, 1999)
- Executive Order 13514, Federal Leadership in Environmental Energy, and Economic Performance, October 5, 2009
- Executive Order 13653, Preparing the United States for the Impacts of Climate Change, November 1, 2013
- Secretarial Order 3226A1, Climate Change Impacts, January 16, 2009
- Secretarial Order 3289, Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources, September 14, 2009

Policies

- United States DOI Manual (DM) (910 DM 1.3)
- 1995 Federal Wildland Fire Management Policy
- 2001 Updated Federal Wildland Fire Management Policy (1995 Federal Wildland Fire Management Policy update)
- 1998 Departmental Manual 620 Chapter 1, Wildland Fire Management General Policy and Procedures
- Interagency Standards for Fire and Fire Aviation Operations: as amended annually, describes policy and operations for all fire-related activities in the DOI and the US Department of Agriculture (USDA)
- BLM Manual Section 9214, Prescribed Fire Management (1988) and BLM Handbook 9214 (2000): describe the authority and policy for prescribed fire use on BLM-administered public lands

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECS)

Federal Laws, Regulations, Statutes, and Orders

- FLPMA Section 202 (43 USC 1712[c][3])
- 43 CFR 1610.7-2

Policies

- FLPMA and BLM Manual Section 1613 (BLM, 1988) requires the BLM to give priority to the designation and protection of ACECs during the land use planning process
- This analysis and the resultant findings for ACEC relevance and importance criteria has been performed pursuant to FLPMA Section 202 (43 USC 1712[c][3]), 43 CFR 1610.7-2, and BLM Manual 1613 (USDI BLM 1988)

BYWAYS AND BACKWAYS

Federal Laws, Regulations, Statutes, and Orders

- The **National Scenic Byways Program** was established under the Intermodal Surface Transportation Efficiency Act of 1991, and reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the US Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. All-American Roads must exhibit multiple intrinsic qualities. For a highway to be considered for inclusion in the National Scenic Byways Program, it must provide safe passage for passenger cars year-round, it must be designated a State Scenic Byway, and it must have a current corridor management plan in place. Installation of offsite outdoor advertising (e.g., billboards) is not allowed along byways.

CAVE AND KARST

Federal Laws, Regulations, Statutes, and Orders

- The Federal Cave Resources Protection Act of 1988, 16 USC 4301, requires Federal agencies to identify, protect, and maintain significant caves. The locations of such cave may be kept confidential. Protection is afforded to not only the geologic structure, but also the associated decorations, inhabitants, artifacts, and water resources.

- 43 CFR, Subpart 37 addresses protection of significant caves and cave resources, including paleontological resources.

Policies

- BLM Manual 8380 (Cave and Karst Resources Management)
- West Nile Syndrome policy in WO IM 2010-181.

CULTURAL RESOURCES

Federal Laws, Regulations, Statutes, and Orders

- The Antiquities Act of 1906, 16 USC 431-433, provides guidance for protecting cultural resources on federal lands and authorizes the President to designate national monuments on federal lands.
- The Historic Sites Act of 1935 established a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.
- The National Historic Preservation Act of 1966 (NHPA), as amended, 16 USC 470, directs agencies to consider the effects of proposed actions on properties eligible for, or included on, the National Register of Historic Places (NRHP). An “historic property” is any district, building, structure, site, or object that is eligible for listing on the NRHP because the property is significant at the national, state, or local level in American history in its architecture, archaeology, engineering, or culture. In some cases, such properties can be eligible because of historical importance to Native Americans, including traditional religious and cultural importance. The NHPA Section 110 requires each federal agency to establish an affirmative program to identify, evaluate, protect, and preserve historic properties in consultation with others.
- The American Indian Religious Freedom Act of 1978, 42 USC 1996, establishes a national policy to protect and preserve the right of American Indians to exercise traditional Indian religious beliefs or practices including, but not limited to, access to religious sites. Agencies are to avoid unnecessary interference with traditional tribal spiritual practices. In addition, compliance requires consultation with tribes when land uses might conflict with Indian religious beliefs or practices.
- The Archaeological Resources Protection Act of 1979, 16 USC 470, as amended, defines and provides for the protection of archaeological resources on federal lands, irrespective of eligibility for listing on the NRHP, establishes a permit system for resources more than 100 years old, and requires agencies to provide for public education and continuing inventory of federal lands.
- Native American Graves Protection and Repatriation Act of 1990, 25 USC 3001, establishes rights to Indian tribes and Native Hawaiians to claim ownership for the repatriation of human remains, and also funerary, sacred, and other objects, controlled by federal agencies and museums. Agency discoveries of such human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.
- National Trails System Act of 1968 (Public Law 90-543; 16 USC 1241 et seq., as amended through Public Law 107-325, December 4, 2002) established a National Trails System to promote preservation of, public access to, travel within, and enjoyment of the open-air, outdoor areas and historic resources of the nation. The Act designated initial trail system components and established methods and standards for adding additional components.
- Executive Order 11593 of 1971, directs federal agencies to inventory public lands and to nominate eligible properties to the NRHP.

- Executive Order 13007 of 1996 (Indian Sacred Sites; 61 *Federal Register* 104), explicitly does not create any new right for Indian tribes, but does require federal agencies, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.
- Executive Order 13175 of 2000 (Consultation and Coordination with Indian Tribal Governments) provides, in part, that each federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on federal matters that significantly or uniquely affect their communities.
- Executive Order 13287 of 2003 (Preserve America), directs federal agencies to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties managed by the federal government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties, and establishing agency accountability for inventory and stewardship.
- Secretarial Order 3206 (American Indian Tribal Rights, Federal–Tribal Trust Responsibilities, and the Endangered Species Act)
- 36 CFR 60 and 63 discuss the NRHP and eligibility criteria for listing properties.
- 36 CFR 68 describes the Secretary of the Interior's standards for the treatment of historic properties.
- 36 CFR 800 outlines the NHPA Section 106 process for protecting historic properties.
- 43 CFR 3 and 7 discuss the preservation of American antiquities and archaeological sites.
- 43 CFR 10 discusses requirements for implementing the Native American Graves Protection and Repatriation Act.

Policies

- BLM Manuals – 8100 Series: Cultural Resources Management: The manual is a reference source that provides basic information and general summary guidance for the BLM Cultural Resource Management Program. The series includes 8110, Identifying Cultural Resources; 8120, Tribal Consultation under Cultural Resource Authorities; 8130, Planning for Uses of Cultural Resources; 8140, Protecting Cultural Resources; and H-8120-1, Guidelines for Conducting Tribal Consultation.
- IM 2005-003 (Cultural Resources and Tribal Consultation for Fluid Minerals Leasing)

MOUs

- The Rangeland Programmatic Memorandum of Agreement (MOA) among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers

FISH AND WILDLIFE HABITAT

Federal Laws, Regulations, Statutes, and Orders

- Sikes Act of 1974, Title II (16 USC 670g et seq.), as amended: This Act directs the Secretaries of Interior and Agriculture to, in cooperation with the state agencies, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game species. Such conservation and rehabilitation programs shall include, but are not limited to, specific habitat improvement projects and related activities, and adequate protection for species considered threatened or endangered.

- The Migratory Bird Act of 1929, as amended: This Act establishes federal responsibility to protect international migratory birds and authorizes the Secretary of the Interior, through the United States Fish and Wildlife Service (FWS), to regulate hunting of migratory birds.
- Fish and Wildlife Coordination Act (16 USC 661 et seq.)
- International Migratory Bird Treaty Act of 1918 (16 USC 703-711)
- Migratory Bird Conservation Act of 1979 (16 USC 715)
- Executive Order 13186 (Migratory Birds)
- Bald and Golden Eagle Protection Act of 1940 (16 USC 668-668d), as amended
- Endangered Species Act of 1973 (16 USC 1531-1544), as amended
- Federal Land Policy and Management Act of 1976 (43 USC 1701-1785)
- Fish and Wildlife Act of 1956 (16 USC 742a et seq.)
- Fish and Wildlife Conservation Act of 1980 (16 USC 2901-2911)
- Migratory Bird Conservation Act of 1934 (16 USC 715 et seq.)
- Migratory Bird Treaty Act of 1918 (16 USC 703-712)
- Multiple-Use Sustained-Yield Act of 1960 (16 USC 528-531)
- Public Rangeland Improvement Act of 1978 (43 USC 1901-1908)
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 17, 2001)

Policies

- *Wind Energy Development Programmatic EIS* (2006): The Programmatic EIS evaluates the potential impacts associated with the proposed action to develop a Wind Energy Development Program, including the adoption of policies and best management practices (BMPs) and the amendment of 52 BLM LUPs to address wind energy development.
- *Bureau of Land Management National Sage-Grouse Habitat Conservation Strategy Guidance for the Management of Sagebrush Plant Communities for Sage-Grouse Conservation*, DOI, November 2004
- West Nile Syndrome policy in WO IM 2010-181.

MOUs

- The FWS and BLM signed an MOU in April 2010 that outlines a collaborative approach to promote the conservation of migratory bird populations.

FORESTRY AND WOODLAND PRODUCTS

Federal Laws, Regulations, Statutes, and Orders

- The Healthy Forests Initiative
- The Healthy Forests Restoration Act of 2003
- Agricultural Act of 2014 – Public Law 113-79 Section 8205

HAZARDOUS MATERIALS AND PUBLIC SAFETY

Federal Laws, Regulations, Statutes, and Orders

- Resource Conservation and Recovery Act (Public Law 94-580), as amended: In 1976, this Act established a system for managing nonhazardous and hazardous solid wastes in an environmentally sound manner. Specifically, it provides for the management of hazardous wastes from the point of

origin to the point of final disposal (i.e., “cradle to grave”). The Act also promotes resource recovery and waste minimization.

- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 USC 9600)
- Solid Waste Disposal Act, as amended (42 USC 6900)
- Superfund Amendments Reauthorization Act
- Toxic Substances Control Act
- Clean Water Act
- 29 CFR 1910
- 49 CFR 100-185
- 40 CFR 100-400

LANDS AND REALTY

Federal Laws, Regulations, Statutes, and Orders

- National Energy Policy of 2001
- Energy Policy Act of 2005, Public Law 109-58
- Mineral Leasing Act of 1920, as amended (30 USC 181 et seq.)
- Recreation and Public Purposes Act of 1926, as amended (43 USC 869 et seq.)
- Federal Highway Act of 1958 (23 USC 317)
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1971
- Land and Water Conservation Fund Act of 1965, as amended
- The Federal Power Act of 1920, as amended
- 43 CFR 2100 (Acquisitions)
- 43 CFR 2200 (Exchanges)
- 43 CFR 2300 (Withdrawals)
- 43 CFR 2400 (Land Classification)
- 43 CFR 2500 (Disposition: Occupancy and Use)
- 43 CFR 2600 (Disposition: Grants)
- 43 CFR 2700 (Disposition: Sales)
- 43 CFR 2800 (Use: Rights-of-Way [ROWS])
- 43 CFR 2880 (Use: Mineral Rights-of-Way [ROWS])
- 43 CFR 2900 (Uses: Leases and Permits)
- 43 CFR 9230 (Trespass)

Policies

- BLM-H-2100-1 (Acquisition Handbook)
- BLM-MS-2200 (Land Exchange Handbook)
- BLM-MS-2310 Withdrawals, General Procedures (Supplement)
- BLM-MS-2540 Color of Title Grants
- BLM-MS-2621 Indemnity Selections
- BLM-H-2740-1 (Recreation and Public Purposes Handbook)
- BLM-MS-2800 (FLPMA ROW)
- BLM-H-2860-1 Communications Site Right-of-Way Management
- BLM-MS-2880 (MLA ROW)
- BLM-H-9232-1 Realty Trespass Abatement
- DOI 603 DM (Land Withdrawals)

Other

- *Wind Energy Development Programmatic EIS* and associated LUP amendments (BLM, 2005b)
- *Programmatic EIS, Designation of Energy Corridors on Federal Land in the 11 Western States* (DOE EIS-0386) (Draft October 2007)
- Wind Energy Development Policy (IM 2006-216)

LIVESTOCK GRAZING

Federal Laws, Regulations, Statutes, and Orders

- The Taylor Grazing Act of June 28, 1934, as amended (42 USC 315, 315a - 315r), provides direction to protect rangelands by preventing overgrazing and soil deterioration while providing for managed use and improvement, and to stabilize the livestock industry dependent upon public lands.
- The Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) recognizes livestock grazing as one of the “principal or major uses” of the public lands. It directs that the public lands be managed on the basis of multiple use and sustained yield in a manner that will provide food and habitat for fish and wildlife, and domestic animals while protecting the quality of other values (i.e., scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological).
- Public Rangelands Improvement Act of 1978 (43 USC 1901 et seq.) provides policy to manage, maintain, and improve the condition of public rangelands to increase productivity in accordance with management objectives and the land use planning process.
- 43 CFR 4100, Grazing Administration, exclusive of Alaska, provides uniform guidance for administration of grazing on the public lands. The objectives for grazing administration regulations are to “promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; to promote the orderly use, improvement and development of the public lands; to establish efficient and effective administration of grazing of public rangelands; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands” (43 CFR 4100.0-2).
- Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration (43 CFR 4180 et seq.) defines the minimum resource conditions that must be achieved and maintained and the acceptable management practices to be applied to achieve those conditions.

MINERALS

Federal Laws, Regulations, Statutes, and Orders

- The Onshore Oil and Gas Leasing Reform Act, 30 USC 181 et seq., provides that potential oil and gas resources be adequately addressed in planning documents; the social, economic, and environmental consequences of exploration and development of oil and gas resources be determined; and any stipulations to be applied to oil and gas leases be clearly identified.
- Onshore Oil and Gas Order Nos. 1, 2, and 7
- The General Mining Law, as amended, 30 USC 21 et seq., allows the location, use, and patenting of mining claims on sites on public domain lands of the United States. Amendments established a policy of fostering development of economically stable mining and minerals industries, their orderly and economic development, and studying methods for disposal of waste and reclamation.

- Combined Hydrocarbon Leasing Act of 1981
- Energy Policy and Conservation Act, as amended (42 USC 6201)
- Federal Coal Leasing Amendments Act of 1976 (30 USC 201)
- Mineral Leasing Act of 1920, as amended (30 USC 181 et seq.)
- Mining and Mineral Policy Act of 1970 (30 USC 21a)
- Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)

MOUs

- The Federal Coal Management Programmatic MOA among the BLM, Office of Surface Mining, DOI, US Geological Survey (GS), and the Advisory Council on Historic Preservation
- National BLM/US Forest Service (FS) MOU Concerning Oil and Gas Leasing and Operations, FS Agreement No. 06-SU-11132428-052

NATIONAL TRAILS

Federal Laws, Regulations, Statutes, and Orders

- National Trails System Act, as amended (16 USC 1241)

NATIVE AMERICAN RELIGIOUS CONCERNS

Federal Laws, Regulations, Statutes, and Orders

- The National Environmental Policy Act of 1969 establishes national policy for protection and enhancement of the human environment. Part of the function of the federal government, as stated in the Act, is to “preserve important . . . cultural . . . aspects of our national heritage and maintain whenever possible an environment which supports diversity and variety of individual choice.”
- The Federal Land Policy and Management Act of 1976 requires coordination with Indian tribes, and with other federal agencies and state and local governments, in the preparation and maintenance of an inventory of the public lands and their various resource and other values, in the development and maintenance of long-range plans providing for use management of the public lands.
- The American Indian Religious Freedom Act of 1978 resolves that it shall be the policy of the United States to protect and preserve for the American Indian, Eskimo, Aleut, and Native Hawaiian the inherent right of freedom to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. Federal agencies are directed to evaluate their policies and procedures to determine if changes are needed to ensure that such rights and freedoms are not disrupted by agency practices. The Act, a specific expression of First Amendment guarantees of religious freedom, is not implemented by regulations.
- The National Historic Preservation Act of 1966, as amended, addresses preservation of historic properties, including historical, archaeological, and architectural districts, sites, buildings, structures, and objects that are eligible for listing on the NRHP. In some cases, such properties might be eligible because of historical importance to Native Americans, including traditional religious and cultural importance. Federal agencies must take into account effects of their undertakings on eligible properties.
- The Archaeological Resources Protection Act of 1979 provides for the protection and management of archaeological resources, and specifically requires notification of the affected Indian tribe if

archaeological investigations proposed in a permit application would result in harm to or destruction of any location considered by the tribe to have religious or cultural importance.

- The Native American Graves Protection and Repatriation Act of 1990, 25 USC 3001, establishes rights to Indian tribes and Native Hawaiians to claim ownership and repatriate human remains, and also funerary, sacred, and other objects, controlled by federal agencies and museums. Agency discoveries of human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.
- Executive Order 13007, Indian Sacred Sites (61 *Federal Register* 104) explicitly does not create any new right for Indian tribes, but does require federal agencies, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.
- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments provides, in part, that each federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on federal matters that significantly or uniquely affect their communities.
- Secretarial Order 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act, requires DOI agencies to consult with Indian tribes when agency actions to protect a listed species, as a result of compliance with the Endangered Species Act, affect or could affect Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.
- The Tribal Forest Protection Act of 2004 provides a tool for tribes to propose work and enter into contracts and agreement with the FS or the BLM to reduce threats from catastrophic events that originate on federal lands adjacent to Indian trust land and Indian communities.
- Tribal Forest Protection Act, Public Law 108-27

PALEONTOLOGY

Federal Laws, Regulations, Statutes, and Orders

- The Federal Land Policy and Management Act of 1976 (Public Law 94-579) requires that the public lands be managed in a manner that protects the “. . . quality of scientific . . .” and other values. The Act also requires the public lands to be inventoried and provides that permits may be required for the use, occupancy, and development of the public lands.
- National Environmental Policy Act of 1969 (Public Law 91-190) requires that “. . . important historic, cultural and natural aspects of our national heritage . . .” be protected, and that “. . . a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences . . . in planning and decision making . . .” be followed.
- Omnibus Public Land Management Act of 2009, Public Law 111-011, Title VI, Subtitle D on Paleontological Resources Preservation (123 Stat. 1172; 16 USC 470aaa), requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using scientific principles and expertise.
- 43 CFR Subpart 8365 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants.
- 43 CFR Subpart 3622 addresses the free use collection of petrified wood as a mineral material for noncommercial purposes.
- 43 CFR Subpart 3621 addresses collection of petrified wood for specimens exceeding 250 pounds in weight.
- 43 CFR Subpart 3610 addresses the sale of petrified wood as a mineral material for commercial purposes.

- 43 CFR Subparts 3802 and 3809 address protection of paleontological resources from operations authorized under the mining laws.
- 43 CFR Subpart 8200 addresses procedures and practices for the management of lands that have outstanding natural history values, such as fossils, that are of scientific interest.
- 43 CFR Subpart 1610.7-2 addresses the establishment of ACECs for the management and protection of significant natural resources, such as paleontological localities.
- 43 CFR Subpart 8364 addresses the use of closure or restriction of public lands to protect resources. Such closures or restrictions may be used to protect important fossil localities.
- 43 CFR Subpart 8365.1-5 addresses the willful disturbance, removal, and destruction of scientific resources or natural objects, and Subpart 8360.0-7 identifies the penalties for such violations.
- 36 CFR Subpart 62 addresses procedures to identify, designate, and recognize national natural landmarks which include fossil areas.
- 18 USC Section 641 addresses the unauthorized collection of fossils as a type of government property.
- Secretarial Order 3104 grants to the BLM the authority to issue paleontological resource use permits for lands under its jurisdiction.
- Onshore Oil and Gas Order No. 1 and 43 CFR 3162 provide for the protection of natural resources and other environmental concerns, and are used to protect paleontological resources where appropriate.
- Federal Cave Resources Protection Act of 1988 (Public Law 100-691) and 43 CFR Subpart 37 address protection of significant caves and cave resources, including paleontological resources.

Policies

- BLM Manual and Handbook 8270, Paleontological Resource Management Program, and Handbook 8270-1 provide uniform policy and direction for the BLM Paleontological Resource Management Program. The objective of the program is to provide a consistent and comprehensive approach in all aspects relating to the management of paleontological resources including identification, evaluation, protection, and use.

RECREATION

Federal Laws, Regulations, Statutes, and Orders

- The Recreation and Public Purposes Act, as amended (43 USC 869 et seq.), authorizes the Secretary of the Interior to lease or convey BLM-administered lands for recreational and public purposes under specified conditions.
- Executive Order 11644 (37 *Federal Register* 2877), February 8, 1972, provided that off-highway vehicle (OHV) use will be controlled and managed to protect resource values, promote public safety, and minimize conflicts with uses of public lands. This Executive Order directed federal agencies to designate specific areas and trails on public lands where OHV use may be permitted and areas where OHV use may not be permitted.
- On May 24, 1977, President Carter amended Executive Order 11644 with Executive Order 11989. This Executive Order further defined OHV administrative use exemptions and directed agencies to immediately close areas and trails whenever the agency determines that the use of OHVs will cause, or is causing, considerable adverse effects on the soil, wildlife and wildlife habitat, or cultural or historic resources (42 USC 4321).

- The BLM National Management Strategy for Motorized OHV Use on Public Lands (2001) provides agency guidance and offers recommendations for future actions to improve motorized vehicle management.
- 43 CFR 2930 for Special Recreation Permits

Policies

- BLM Manual 8340 (OHV Management)
- BLM Manual 8320 (Planning for Recreation and Visitor Services)
- BLM Handbook 8342 (Travel and Transportation)

RENEWABLE ENERGY

Federal Laws, Regulations, Statutes, and Orders

- Executive Order 13212 states that “[i]t is the policy of this Administration that executive departments and agencies (agencies) shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.”
- Energy Policy Act of 2005 (August 2005) recommended that the DOI strive to approve at least 10,000 megawatts (MW) of renewable energy projects on public lands by 2015.
- Energy Independence and Security Act of 2007 (December 2007) requires DOE to assess methods to integrate electric power generated at utility-scale solar facilities into regional electricity transmission systems and to identify transmission system expansions and upgrades needed to move solar-generated electricity to growing electricity demand centers throughout the United States. In addition, this Act requires the Department of Energy (DOE) to consider methods to reduce the amount of water consumed by concentrating solar power systems.
- Secretarial Order 3283 (January 2009) clarifies DOI roles and responsibilities to accomplish the goals for renewable energy development established in Section 211 of the Energy Policy Act of 2005.
- Executive Order 13514 (October 2009) requires that federal agencies take efforts to align their policies to advance local planning efforts for energy development, including renewable energy, and states that agencies shall “advance regional and local integrated planning by . . . aligning Federal policies to increase the effectiveness of local planning for energy choices such as locally generated renewable energy.”
- Secretarial Order 3285A1 (March 2009) set a goal of identifying and prioritizing specific locations best suited for large-scale production of solar energy on public lands. It requires DOI agencies and bureaus to work collaboratively to encourage development of renewable energy and associated transmission while protecting the environment, and to establish clear policy direction for authorizing the development of solar energy on public lands. On February 22, 2010, Secretarial Order 3285 was amended to clarify Departmental roles and responsibilities in prioritizing development of renewable energy. The amended order is referred to as Secretarial Order 3285A1.
- Executive Order 13134, Developing and Promoting Biobased Products and Bioenergy (1999) called for a comprehensive strategy to stimulate technologies to make biobased products and bioenergy cost-competitive in national and international markets.
- The Biomass Research and Development Act of 2000 established mechanisms for interagency coordination on biomass technologies, including the Biomass Research and Development Technical Advisory Committee and the Biomass Research and Development Board.

- Farm Bill 2002 included a number of authorizations related to renewable energy development and bioenergy.
- The Healthy Forests Restoration Act of 2003 encouraged biomass energy production through grants and assistance to local communities, creating market incentives for removal of otherwise valueless forest material.
- The Food Conservation and Energy Act of 2008 provided grants and financial incentives for investment in renewable technologies to use agricultural and forestry crops for bioenergy.
- The Mineral Leasing Act of 1920 (as amended) contains the statutes that provide overall guidance to the BLM on mineral leasing, including geothermal development.
- The Mining and Mineral Policy Act of 1970 requires federal agencies to encourage the development of mineral resources, including geothermal resources, on federal lands.
- The Geothermal Steam Act of 1970, which was amended and supplemented by the Energy Policy Act of 2005, provides statutory guidance for geothermal leasing by the BLM.
- The Advanced Geothermal Energy Research and Development Act of 2007 called for programs of research, development, demonstration, and commercial application to expand the use of geothermal energy production.
- DOE and USDI-BLM Assessing the Potential for Renewable Energy on Public Land (February 2003)
- USDI-BLM and FS Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western United States, December 2008

Policies

- BLM Energy and Mineral Policy (August 2008) sets BLM policy for management of energy and mineral resources on public lands as part of the agency's multiple-use mission, including environmentally sound energy and minerals development.
- BLM Right-of-Way Management Manual 2801 and Handbook H-2801-1 were both amended by the new Wind Energy Development Policy contained in IM 2009-043.
- BLM Manual 2881, Mineral Leasing Act provides overall guidance to the BLM on mineral leasing procedures.
- BLM Manual 3031, Energy and Mineral Resource Assessment (1985) provides guidance and sets standards for gathering and analyzing information on energy and mineral resources, including geothermal resources, for land use decisions.
- BLM Manual 3060, Mineral Reports Preparation and Review (1994) provides guidelines for preparation and review of energy and mineral resources reports.

MOUs

- Memorandum of Understanding on Policy Principles for Woody Biomass Utilization for Restoration and Fuel Treatments on Forests, Woodlands, and Rangelands (2003) was signed by the departments of Agriculture, Energy, and the Interior and encouraged opportunities to provide a reliable, sustainable supply of wood biomass and the sustainable development and stabilization of woody biomass markets.
- Memorandum of Understanding, Implementation of Section 225 of the Energy Policy Act of 2005 Regarding Geothermal Leasing and Permitting (2006) established procedures for processing geothermal lease applications, a program to reduce the backlog of pending geothermal lease applications, and a data retrieval system for tracking lease and permit applications.

Other

- *Record of Decision, Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in the Western United States* (December 2005) adopted a comprehensive Wind Energy Development Program on BLM-administered lands in 11 western states, including Montana. The Record of Decision (ROD) also established policies and BMPs to mitigate the impacts of wind energy projects. In addition, it amended 52 BLM land use plans to include the Wind Energy Development Program policies and BMPs. The amended plans included the *Judith-Valley-Phillips (JVP)* and *Headwaters RMPs*.
- USDI-BLM Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States, October 2012

RIPARIAN AND WETLANDS

Federal Laws, Regulations, Statutes, and Orders

- Executive Order 11990: Protection of Wetlands - The purpose of Executive Order (EO) 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands".
- Executive Order 11988: Floodplain Management requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Floodplains are one of the most common locations for riparian and wetland habitats in Montana.
- Clean Water Act (33 USC §1251 et seq.) requires a permit for any person, agency, entity, either public or private, proposing a project that will result in the discharge or placement of dredged or fill material into waters of the United States, including wetlands.
- Rangeland Reform '94: Standards for Rangeland Health and Guidelines for Livestock Grazing Management, Lewistown Standard #2 – Riparian and wetland areas are in proper functioning condition requires that riparian and wetland areas on public land are at or making significant progress toward achieving this condition.

State Laws and Regulations

- Montana's 401 Water Quality Certification ARM 17.30.101-109 – Under Section 401 of the Federal Clean Water Act, states and tribes can review and approve, condition, or deny all federal permits or licenses that might result in a discharge to state or tribal waters, including wetlands.

SOCIAL AND ECONOMIC CONDITIONS

Federal Laws, Regulations, Statutes, and Orders

- Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (49 *Federal Register* 7629) requires that each federal agency consider the impacts of its programs on minority populations and low-income populations.

SPECIAL STATUS SPECIES

Federal Laws, Regulations, Statutes, and Orders

- The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), as amended, directs the BLM to (1) conserve threatened and endangered species and the ecosystems upon which they depend, and (2) not contribute to the need to list a species. Provisions of the ESA, as amended, apply to plants and animals that have been listed as endangered or threatened, those proposed for being listed, and designated and proposed critical habitat.
- The Bald and Golden Eagle Protection Act of 1940, as amended, prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles, including their parts, nests, or eggs. The Act provides for criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle . . . [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” The Act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

Policies

- BLM Special Status Species Policy. It is BLM policy to (1) conserve federally listed and proposed threatened or endangered species and the habitats on which they depend, and (2) ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under provisions of the ESA or other provisions of this policy.
- BLM Manual 6840.06 - BLM Sensitive Species Policy. It is BLM policy to provide sensitive species with the same level of protection as provided for candidate species in BLM Manual 6840.06 C; that is, to “ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed.” The sensitive species designation is normally used for species that occur on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management.
- BLM *National Sage-Grouse Habitat Conservation Strategy* (June 2004). The objective of this strategy is to manage public land in a manner that will maintain, enhance, and restore sage-grouse habitats while providing for multiple uses on public lands. The following five goals will guide BLM implementation of the national strategy: (1) develop a consistent and effective management framework for addressing conservation needs of sage-grouse on public lands; (2) increase our understanding of resource conditions and priorities for maintaining and restoring habitat; (3) expand available research and information that supports effective management of sage-grouse habitat; (4) develop partnerships to enhance effective management of sage-grouse habitats; and (5) ensure leadership and resources are adequate to implement national- and state-level sage-grouse habitat conservation strategies.

State Laws and Regulations

- *Strategic Management Plan for Sage-grouse – 2002*

TRANSPORTATION

Federal Laws, Regulations, Statutes, and Orders

- Executive Order 11989 (Off-Road Vehicles on Public Lands)
- Executive Order 11644 (Use of Off-Road Vehicles on the Public Lands)
- BLM Handbook 8342 (Travel and Transportation)

VEGETATION AND RANGELAND HEALTH

Federal Laws, Regulations, Statutes, and Orders

- Executive Order 13112 (Invasive Species) provides that no federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species, and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.
- The Carlson-Foley Act (Public Law 90-583; 43 USC 1241) establishes legal guidance and responsibility for the management of weeds on federal lands. This law authorizes federal agencies to allow states to take measures to control weeds on federal lands.
- Federal Noxious Weed Act of 1974 (7 USC 2814)
- Public Rangelands Improvement Act of 1978 (43 USC 1901)
- Taylor Grazing Act of 1934 (43 USC 315)
- Executive Order 11987 (Exotic Flora and Fauna)

MOUs

- The Rangeland Programmatic MOA among the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers
- IM 2003-158 (MOU between the BLM and the Animal and Plant Health Inspection Service Addressing the Management of Grasshoppers and Mormon Crickets)

VISUAL RESOURCES

Federal Laws, Regulations, Statutes, and Orders

- Federal Land Policy and Management Act
 - Section 102(a)(8) states that public lands are to be managed in a manner that will protect the quality of the scenic values.
 - Section 103(c) specifically identifies scenic values as a multiple-use resource to be managed.
 - Section 201(a) states that an inventory of all public lands and their resources (including scenic values) is to be prepared and maintained on a continuing basis.
 - Section 505(a) requires that each ROW contains terms and condition to minimize damage to the scenic and aesthetic values.
- National Environmental Policy Act of 1969 (NEPA)
 - Section 101(b) requires measures to be taken to assure aesthetically pleasing surroundings for all Americans.

- Section 102 requires agencies to use a systematic, interdisciplinary approach to ensure the integrated use of Environmental Design Arts in planning and decision making.

Policies

- BLM Manual 8400 Series, Visual Resource Management (VRM) dictates policy and procedures for the VRM system and outlines procedures for the inventory, evaluation, and classification of visual resources on BLM-administered lands.
- BLM Manual Handbook 8410-1 (Visual Resource Inventory)
- BLM Manual Handbook 8431-1 (Visual Resource Contrast Rating)
- IM 2002-096 (use of Visual Resource Management Class I Designation in Wilderness Study Areas)

WATERSHED AND SOILS

Federal Laws, Regulations, Statutes, and Orders

- Soil and Water Resources Conservation Act of 1977 (16 USC 2001)
- Soil Conservation and Domestic Allotment Act of 1935, as amended
- Executive Order 11988, as amended by Executive Order 12148 (Floodplain Management)

Policies

- The US Water Resource Council published Floodplain Guidelines on February 10, 1978, after being directed to establish guidelines for floodplain management and preservation.
- The Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (*65 Federal Register* 62565, October 18, 2000)

WATER QUALITY

Federal Laws, Regulations, Statutes, and Orders

- The Clean Water Act (33 USC 1251) establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water.
- The Federal Water Pollution Control Act, 33 USC 1323 requires the federal land manager to comply with all federal, state, and local requirements regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity.
- The Safe Drinking Water Act, 42 USC 201 is the main federal law that ensures the quality of Americans' drinking water and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. (The SDWA does not regulate private wells which serve fewer than 25 individuals.)
- Rangeland Reform '94: *Standards for Rangeland Health and Guidelines for Livestock Grazing Management*, Lewistown Standard #3 – Water quality meets Montana State standards requires that water bodies on BLM-managed lands are at, or making significant progress toward, achieving this condition.

State Laws and Regulations

- Montana Water Quality Act (MCA Title 75. Chapter 5. Water Quality) is the primary basis for water quality protection in the State of Montana.

- Montana Water Use Act (MCA Title 85. Chapter 2. Water Use) is to provide water for existing and future beneficial uses of water and to maintain a minimum flow, level, or quality of water.
- Montana Natural Streambed and Land Preservation Act (310 Permit) requires a permit for any private, nongovernmental individual or entity that proposes to work in or near a stream on public or private land. The purpose is to minimize soil erosion and sedimentation and to protect and preserve streams and rivers in their natural or existing state.
- Montana Stream Protection Act (124 Permit) requires a permit for any agency or subdivision of federal, state, county, or city government proposing a project that may affect the bed or banks of any stream in Montana.
- Montana Floodplain and Floodway Management Act requires a permit for anyone planning new construction within a designated 100-year floodplain.
- Streamside Management Zone Law prohibits certain timber harvest activities within at least 50 feet of any stream, lake, or other body of water.

MOUs

- Memorandum of Understanding Regarding Water Quality Management on Bureau of Land Management Lands in Montana, Between the Montana Department of Environmental Quality and the United States Department of Interior Bureau of Land Management – The purpose is to manage and control nonpoint source pollution from BLM-managed lands and authorizations.

WILD AND SCENIC RIVERS

Federal Laws, Regulations, Statutes, and Orders

- The Wild and Scenic Rivers Act of 1968, as amended, 16 USC 1271 et seq. requires federal land management agencies to identify river systems and then study them for potential designation as wild, scenic, or recreational rivers. Section 5(d)(1) of the Act requires that federal agencies make wild and scenic rivers (WSR) considerations during planning.

LANDS WITH WILDERNESS CHARACTERISTICS AND WILDERNESS STUDY AREAS

Federal Laws, Regulations, Statutes, and Orders

- With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated as wilderness.
- The Wilderness Act of 1964 established a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by the National Park Service (NPS) and the FS.

Policies

- BLM Manual 6310 (Conducting Wilderness Characteristics Inventory on BLM Lands)
- BLM Manual 6320 (Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process)
- BLM Manual 6330 (Management of Wilderness Study Areas), superseded H-8550-1 (Interim Management Policy for Lands Under Wilderness Review)

WILDLAND FIRE ECOLOGY

Federal Laws, Regulations, Statutes, and Orders

- The Protection Act of September 20, 1922 (42 Stat. 857; USC 594) authorizes the Secretary of Interior to protect and preserve from fire, disease, or the ravages of beetles or other insects, timber owned by the United States upon the public lands, national parks, national monuments, Indian reservations, or other lands under DOI jurisdiction.
- The Clark-McNary Act of 1928 (45 Stat. 221; 16 USC 487) authorized technical and financial assistance to the states for forest fire control and for production and distribution of forest tree seedlings. (Sections 1 through 4 were repealed by the Cooperative Forestry Assistance Act of 1978.)
- The Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 USC 1856, 1856a) authorizes agencies that provide fire protection for any property of the United States to enter into reciprocal agreements with other firefighting organizations to provide mutual aid for fire protection.
- The Air Pollution Control Act of July 14, 1955 (Clean Air Act, as amended 42 USC 7401 et seq.) provides for the protection and enhancement of the nation's air resources and applies to the application and management of prescribed fire.
- The Multiple-Use Sustained-Yield Act of June 12, 1960
- The Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 USC 2201) authorizes reimbursement to state and local fire services for costs incurred in firefighting on federal property.
- The Forest and Rangeland Renewable Resources Planning Act of August 17, 1974
- The Supplemental Appropriation Act of September 10, 1982 (96 Stat. 837) authorized the Secretary of Agriculture and Secretary of the Interior to enter into contracts with state and local governmental entities, including local fire districts, for procurement of services in the preparedness, detection, and suppression of fires on any units within their jurisdiction.
- The Wildfire Suppression Assistance Act of April 7, 1989 (Public Law 100-428, as amended by Public Law 101-11, April 7, 1989; 42 USC 1856) authorizes the Secretary of Agriculture to enter into agreements with firefighting organizations of foreign countries for assistance in wildfire protection.
- The Healthy Forest Restoration Act, December 2003 (Public Law 108-148) was crafted to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes.

Policies

- DOI Manual 910 DM 1.3
- 1995 Federal Wildland Fire Management Policy
- 1998 Departmental Manual 620 Chapter 1, Wildland Fire Management General Policy and Procedures
- BLM Manual Section 9212, Fire Prevention (1992). It is the policy of the BLM to take all necessary actions to protect human life, the public lands, and the resources and improvements thereon through the prevention of wildfires.
- BLM Manual Section 1742, Emergency Fire Rehabilitation, and BLM Handbook 1742 provide guidance for emergency fire rehabilitation, including measures to prevent accelerated soil erosion, prevent the establishment of noxious and/or invasive plant species, and implement post-fire management of restoration areas. Fireline rehabilitation would include restoration of surface contours and closure to vehicles.

- BLM Manual Section 9214, Prescribed Fire Management (1988), and BLM Handbook 9214 (2000) describe the authority and policy for prescribed fire use on BLM-administered public lands.
- Interagency Standards for Fire and Fire Aviation Operations, as amended annually, describes policy and operations for all DOI and USDA fire-related activities.
- BLM Manual 1740 and BLM Manual Handbook H-1740-1 provide guidance and procedures for management and treatment of renewable resources, including utilization of management-prescribed fire and emergency fire rehabilitation.
- 2001 Review and Update of the 1995 Federal Wildland Fire Management Policy
- A Report to the President in Response to the Wildfires of 2000 (September 2000), "Managing the Impacts of Wildfires on Communities and the Environment."
- A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the Environment: 10-Year Comprehensive Strategy (August 2001). This document provides a foundation for wildland agencies to work closely with all levels of government; tribes; and conservation-, commodity-, and community-based restoration groups to reduce wildland fire risk to communities and the environment. It also provides a suite of core principles and four goals. The core principles include the concepts of collaboration, priority setting, and accountability.
- Restoring Fire Adapted Ecosystems on Federal Lands: A Cohesive Strategy for Protecting People and Sustaining Natural Resources, February 2002. The primary goal is to coordinate an aggressive, collaborative approach to reduce the threat of wildland fire to communities and to restore and maintain land health.
- Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities, August 2002. The Healthy Forest Initiative will implement core components of the National Fire Plan's 10-Year Comprehensive Strategy and Implementation Plan. This historic plan, which was adopted by federal agencies and western governors in collaboration with county commissioners, state foresters, and tribal officials, calls for protecting communities and the environment through local collaboration on thinning, planned burns, and forest restoration projects. The initiative will complement the National Fire Plan by reducing unnecessary regulatory obstacles and allowing more effective and timely actions.

Other

- Western Governors' Association: Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy: Implementation Plan, August 2001. This plan outlined a comprehensive approach for the management of wildland fire, hazardous fuels, and ecosystem restoration and rehabilitation on federal and adjacent state, tribal, and private forest and rangelands in the United States, emphasizing measures to reduce the risk to communities and the environment.
- Western Governors' Association: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy Implementation Plan, May 2002, 27 p.
- National Academy of Public Administration: Federal Fire Management: Limited Progress in Restarting the Prescribed Fire Program (GAO/RCED-91-42), December 5, 1990. The report reiterated that fire is beneficial and even necessary to wild lands. Where fire has been a historic component of the environment, it is essential to continue that influence, and attempts to exclude fire from such lands could result in unnatural ecological changes and increased risks created by accumulation of fuels on the forest floor. The report supported the use of prescribed burns to achieve management objectives, when the risks of such burns have been analyzed.

CHAPTER 7

SUMMARY OF SCOPING

Prior to, and during the scoping process, the Lewistown Field Office (LFO) formally invited 61 local, state, federal, and tribal governments from within and surrounding the planning area to participate as cooperating agencies in the resource management plan (RMP) planning process. As of August 2014, nine cooperating agencies have entered into formal memorandum of understanding (MOU) agreements with the Bureau of Land Management (BLM).

During the scoping period, a series of six public meetings/open houses were held to encourage public comment on the planning process. Meetings were held in White Sulphur Springs, Winifred, Winnett, Great Falls, Lewistown, and Choteau. A total of 95 people attended the open houses. In addition to the six formal scoping meetings, BLM publically offered to schedule additional presentations or scoping meetings to groups, organizations, or tribes upon request. The BLM received five requests and made RMP presentations to the following five groups:

- Charles M. Russell Six County Working Group (Lewistown, MT; February 27, 2014)
- Central Montana Resource Council (Lewistown, MT; March 19, 2014)
- Conservation Roundtable (Billings, MT; April 15, 2014)
- Fergus County Mutual Issues (Lewistown, MT; May 15, 2014)
- Montana Farmer's Union (Lewistown, MT; June 5, 2014)

Coordination with Native American tribal governments was also initiated prior to, and during, the scoping period. Invitations to participate as cooperating agencies were sent to 10 tribal governments on August 16, 2013. In February 2014, offers of government-to-government consultation were made to the Blackfeet, Nez Perce, Shoshone-Bannock, Confederated Salish-Kootenai, Fort Peck, Little Shell, Northern Cheyenne, Crow, Chippewa-Cree, and Fort Belknap Indian Community. Coordination and consultation with these tribes will continue throughout the planning effort.

On February 10, 2014, BLM) formally initiated the planning process to revise its land use plans with the publication of a Notice of Intent. As part of this process, opportunities for public input were created through a scoping process. The purpose of scoping, as required by the National Environmental Policy Act (NEPA), is to determine the scope and significance of issues related to a proposed action such as the development and implementation of an RMP revision (40 CFR 1501.7). These issues guide the development of alternatives that will be evaluated in the environmental impact statements (EISs) and will ultimately guide development of the RMP. Scoping also provides the public an opportunity to learn about the management of public lands and helps BLM identify the public's concerns regarding resources within the decision area. Formal scoping closed on April 11, 2014; however, BLM accepted comments until May 5, 2014, which was 30 days from the last public meeting in Choteau, Montana.

Once the official comment period ended, a BLM interdisciplinary team used a multi-step process to categorize and distill the comment documents.

1. Comment documents were reviewed for content; individual and duplicate comments were then identified.
2. A matrix was created listing all of the comments. One or more resource categories were assigned to each comment based upon the resource-specific content of the comment.
3. Categories were then developed and listed on the matrix to determine the disposition of each comment. The categories included:
 - Comment will be addressed in the RMP;

- Comment presents a new issue and will be addressed in the RMP;
 - Comment further refines an existing issue and will be addressed in the RMP;
 - Comment will not be addressed;
 - Comment is beyond the scope of the RMP and will not be addressed;
 - Comment is better addressed administratively or at a lower level of planning;
 - Reference only.
4. Members of the RMP Interdisciplinary Team (IDT) reviewed all comments listed in the matrix and determined the appropriate planning issue category(s) for each comment.
 5. Planning issue statements were written to encapsulate the issues and concerns raised by the scoping comments in each issue category.

The Scoping Comments Matrix provided a summarized list of comment documents by planning issue criteria, organization, and categorization of BLM responses. The BLM received 87 distinct comment documents which resulted in approximately 526 separate comments; most comment documents contained multiple comments. There were 370 unique comments and 159 duplicate comments. Of the total received, 381 comments (254 unique and 127 duplicate) pertained to existing or new planning issues and will be addressed during the RMP planning process. Thirty comments were categorized for reference only. The remaining 115 comments (86 unique and 29 duplicate) will not be addressed during the RMP process; 34 will be addressed administratively or at a lower planning level; 66 comments, predominantly relating to issues with existing oil and gas or grazing regulations, were beyond the scope of the RMP planning process; and 15 will not be addressed because they were either opinions, too vague, nonsubstantive, or unrelated to the planning area.

The BLM condensed 526 substantive comments into 23 planning issue topics developed to further categorize the comments. One issue topic (Visual Resources) did not receive any specific external comments. Because of the unstructured nature of the comment process (i.e., commenters were not answering specific questions, but rather speaking to their concerns), the BLM often received comments that touched on multiple issue categories. Each comment was then coded into one or more categories relating to each issue identified. The 23 issue categories are:

- Access
- Administrative Procedure
- Air and Atmospheric Values
- Cave and Karst Resources
- Cultural Resources
- Fire Management
- Fish and Wildlife
- Forest Products
- Geology and Soil Resources
- Lands and Realty
- Livestock Grazing
- Minerals and Energy
- Paleontological Resources
- Public Safety
- Recreation and Visitor Services

- Socio-economic
- Special Designations
- Travel Management
- Tribal Interests
- Vegetative Communities
- Visual Resources
- Water Resources
- Wilderness Characteristics

The BLM planning regulations (43 CFR 1610.4-2) require the development of planning criteria to guide preparation of the resource management plan. Planning criteria are the constraints or ground rules that guide and direct the preparation of the plans. Planning criteria guide the development of the RMP, ensure that it is tailored to the identified issues, and help to avoid unnecessary data collection and analysis. Planning criteria also streamline the plan preparation; establish standards, rules, and measures to be used; guide and direct the resolution of issues through the planning process; and indicate factors and data that must be considered in making decisions. Planning criteria are based on applicable laws and regulations, agency guidance, and the result of consultation and coordination with the public; other federal, state, and local agencies; and Native American tribes. The BLM identified preliminary planning criteria that have been refined further in Chapter 5 and Chapter 6 of this document.

The following planning criteria were identified during scoping by individuals, organizations, agencies, and tribes. In addition to the planning criteria listed below, many commenters provided literature citations, newspaper articles, and other reference materials that were recommended for consideration in the RMP.

Planning Criteria Identified During Scoping:

- 40 CFR Section 144.3
- 40 CFR § 1502.14 (2010)
- 43 CFR § 1610.4-4 (g)
- 43 CFR Sec 4100.0-8
- 43 CFR 1601.0-5(b)
- 43 CFR § 1610.3-2
- 43 CFR 4180
- 16 USC §§ 431-433 – Antiquities Act of 1906
- 16 USC § 1244(a)(6) – National Trails System Act of 1968, amended in 1978
- Title 18 USC Section 1001
- 42 USC § 4332(2)(C)(iii)
- 42 USC §§ 7401 et seq.
- MDEQ 42 USC§ 7407(a) (2010)
- 42 USC § 7475(d)(2)(B) (2010)
- Administrative Procedures Act (APA)
- Clean Water Act (CWA) of 1972, Section 303(d)
- Energy Policy Act of 2005, Section 363
- False Claims Act
- Federal Land Policy and Management Act of 1976 (FLPMA) – 43 USC § 1712
- National Environmental Policy Act of 1969 (NEPA)
- Taylor Grazing Act of 1934

- BLM Land Use Planning Handbook (H-1601-1)
- 6100 – National Landscape Conservation System Management Manual, p. 1-6; The National Landscape Conservation System: 15-Year Strategy 2010-2025; Bureau of Land Management Montana/Dakotas: National Landscape Conservation System, Three-Year Strategy 2013-2015
- BLM Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands (Public)
- BLM Manual 6320 – Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process
- Executive Order 11644 – Use of Off-road Vehicles on the Public Lands (February 8, 1972)
- Executive Order 11989 – Use of Off-road Vehicles on the Public Lands (May 24, 1977)
- Executive Order 11990 – Protection of Wetlands (May 24, 1977)
- Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994)
- Executive Order 13514 – Federal Leadership in Environmental, Energy, and Economic Performance (October 5, 2009)
- Interior Releases Updated Draft Rule for Hydraulic Fracturing on Public and Indian Lands for Public Comment, BLM, May 16, 2013 EPA, US Department of Agriculture (USDA), and US Department of the Interior (USDI) MOU dated June 23, 2011, regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process
- (http://www.blm.gov/wo/st/en/info/newsroom/2013/may/nr_05_16_2013.html)
- Interagency Prescribed Fire Planning and Implementation Procedures Guide (July 2008)
- BLM Washington Office (WO) Instruction Memorandum No. 2001-191
- BLM WO Instruction Memorandum No. 2002-167
- BLM WO Instruction Memorandum No. 1992-67 (expired)
- Federal Lands Hunting, Fishing and Shooting Sports Roundtable Memorandum of Understanding (MOU) (2006)
- USDI, BLM and USDA, FS MOU No. W0300-2006-07 dated April 2006, concerning Oil and Gas Leasing and Operations
- Onshore Order 2
- Montana State Water Plan, Montana Water Supply Initiative – 2015
(http://www.dnrc.mt.gov/wrd/water_mgmt/state_water_plan/default.asp.)
- Off-Highway Vehicle EIS and Plan Amendment for Montana, North Dakota, and Portions of South Dakota
- Final National Management Strategy for Motorized Off-highway Vehicle Use, January 19, 2001
- Shoshone-Bannock Tribes' Climate Change Policy Statement
- Shoshone-Bannock Tribes' Position Regarding the Transfer of Federal Lands
- Shoshone-Bannock Tribes' Position Statement Regarding Developed Campgrounds on Federal Lands
- Public Law 88-657
- Public Law 105-359 (Improving Access to Outdoor Recreational Activities on Federal Land, prepared by Wilderness Inquiry, June 27, 2000)
- Public Law 109-432, Section 403(a)
- Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota (1977)
- Water Quality Best Management Practices for Montana Forests (Montana State University [MSU] Publication EB158)

A Scoping Summary Report for the Lewistown RMP was completed in August 2014. The report documents issues identified and refined during the scoping process, and provides detailed information that supplements the scoping information in this chapter. The report focuses on public involvement, a summary of the comments, substantive issues, and planning criteria identified during scoping. External agencies and organizations also assisted BLM in identifying data needs for the planning effort.

The Lewistown Field Officer Manager will approve the final issues to be addressed in the RMP along with the planning criteria to be considered, with modifications during the planning process, as needed. The Lewistown Scoping Report can be viewed in its entirety at: <http://blm.gov/ngld>.

CHAPTER 8

LIST OF PREPARERS

PROGRAM AREA	TEAM MEMBER	TITLE
Project Management	Dan Brunkhorst	Planning and Environmental Coordinator
Communication	Jonathan Moor	Public Affairs Specialist
Technical Support	Betty Westburg	Technical Writer/Editor
GIS Support	Hilary Rigby	GIS Specialist
RESOURCES		
Air Resources and Climate Change	Susan Bassett (MSO)	Physical Scientist
Geology	Chris Rye	Geologist
Soil Resources	Mike McNamara (FS Enterprise Teams)	Soil Scientist
Water Resources	Chad Krause	Hydrologist
Vegetative Communities		
Rangelands	Robert Thompson	Rangeland Management Specialist
Forest/Woodlands	Rich Byron	Forester
Riparian-Wetland Communities	Chad Krause	Hydrologist
Special Status Species (Plants)	Wendy Velman (MSO)	Botanist
Invasive Plant Species	Steve Smith	Rangeland Management Specialist
Fish and Wildlife		
Fish and Aquatic Communities	Monica Ketchum	Wildlife Biologist
	Paul Hutchinson	Fisheries Biologist
Wildlife and Habitat	Matt Comer	Wildlife Biologist
Special Status Species (Wildlife)	Matt Comer	Wildlife Biologist
Invertebrate Species	Matt Comer	Wildlife Biologist
Animal Pathogens	Matt Comer	Wildlife Biologist
Wildland Fire Ecology	Karly DeMars	Fire Management Specialist
	Steve Knox	Fire Management Specialist
Cultural and Heritage Resources	Zane Fulbright	Archaeologist
Paleontological Resources	Greg Liggett	Geologist (Paleontology)
Visual Resources	Kelly McGill	Outdoor Recreation Planner
Wilderness Characteristics	Kelly McGill	Outdoor Recreation Planner
Cave and Karst Resources	Chris Rye	Geologist
RESOURCE USES		
Minerals and Energy Resources		
Energy Solid Leasable Minerals	Chris Rye	Geologist
Oil and Gas Leasable Minerals	Dale Manchester (GFFO)	Petroleum Engineer

PROGRAM AREA	TEAM MEMBER	TITLE
	Lottie Hufford (GFFO)	Physical Science Technician
	Andrea Parrott (GFFO)	Natural Resource Specialist
Nonenergy Solid Leasable Minerals	Chris Rye	Geologist
Locatable Minerals	Chris Rye	Geologist
Salable Minerals	Chris Rye	Geologist
Livestock Grazing	Robert Thompson	Rangeland Management Specialist
Recreation and Visitor Services	Kelly McGill	Outdoor Recreation Planner
Travel, Transportation Management, and Access	Kelly McGill	Outdoor Recreation Planner
Lands and Realty	Deb Tucek	Realty Specialist
Renewable Energy	Deb Tucek	Realty Specialist
Withdrawals	Deb Tucek	Realty Specialist
Forest, Woodland, and Special Products	Rich Byron	Forester
SPECIAL DESIGNATIONS		
Areas of Critical Environmental Concern	Kelly McGill	Outdoor Recreation Planner
	Dan Brunkhorst	Planning and Environmental Coordinator
	Zane Fulbright	Archaeologist
	Matt Comer	Wildlife Biologist
Back Country Byways	Kelly McGill	Outdoor Recreation Planner
National Trails	Zane Fulbright	Archaeologist
Wild and Scenic Rivers	Kelly McGill	Outdoor Recreation Planner
Wilderness Study Areas	Kelly McGill	Outdoor Recreation Planner
Outstanding Natural Areas	Kelly McGill	Outdoor Recreation Planner
	Dan Brunkhorst	Planning and Environmental Coordinator
SOCIAL AND ECONOMIC		
Social Conditions	Jessica Montag (Blue Sky Zone)	Socio-Economic Specialist
Economic Conditions	Henry Eichman (FS Enterprise Teams)	Economist
	Kristen Loughery (FS Enterprise Teams)	Economist
Treaty Rights and Tribal Interests	Zane Fulbright	Archaeologist
Environmental Justice	Jessica Montag (Blue Sky Zone)	Socio-Economic Specialist
Public Safety	Dan Brunkhorst	Planning and Environmental Coordinator

PROGRAM AREA	TEAM MEMBER	TITLE
Abandoned Mine Lands	Chris Rye	Geologist
Geologic Hazards	Chris Rye	Geologist
Hazardous Materials	Tessa Wallace (GFFO)	Natural Resource Specialist
MANAGEMENT TEAM		
Gary L. “Stan” Benes	District Manager, Central Montana District	
Geoff Beyersdorf	Field Manager, Lewistown Field Office	
Don Judice	Supervisory Petroleum Engineer, Great Falls Oil and Gas Field Office	
Corey Meier	Assistant Field Manager, Butte Field Office	
MSO SUPPORT AND COORDINATION		
Ruth Miller	Land Use Specialist	

CHAPTER 9

ACRONYMS AND GLOSSARY

ACRONYMS

4WD	Four-wheel Drive
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AFMSS	Automated Fluid Minerals Support System
AFS	American Fisheries Society
AML	Abandoned Mine Lands
AMP	Allotment Management Plan
AMR	Appropriate Management Response
AMS	Analysis of the Management Situation
ANS	Aquatic Nuisance Species
AP	Activity Plan
APD	Application for Permit to Drill
API	American Petroleum Institute
APHIS	Animal Plant and Health Inspection Service
AQD	Air Quality Division
ARM	Administrative Rules of Montana
ASQ	Allowable Sale Quantity
ATV	All-terrain Vehicle
AUM	Animal Unit Month
BACT	Best Available Control Technology
BBS	Breeding Bird Survey
BCF	Billion Cubic Feet
BCR	Bird Conservation Region
Bd	Chytrid Fungus
BF	Board Foot
BFO	Butte Field Office
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMA	Block Management Area
BMP	Best Management Practice
BOR	Bureau of Reclamation

BP	Before Present
CA	Conservation Agreement
CASTNet	Clean Air Status and Trends Network
CCP	Comprehensive Conservation Plan
CDNST	Continental Divide National Scenic Trail
CE	United States Army Corps of Engineers
CESU	Cooperative Ecosystem Studies Unit
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CFWCS	Comprehensive Fish and Wildlife Conservation Strategy
CH	Critical Habitat
CH ₄	Methane
CMFZ	Central Montana Fire Zone
CMP	Comprehensive Management Plan
CMR	Charles M. Russell National Wildlife Refuge
CMU	Classification and Multiple Use Act of 1964
CMZ	Central Montana Zone
CO	Carbon Monoxide
Cohesive Strategy	National Cohesive Wildland Fire Management Strategy
CO ₂	Carbon Dioxide
COE	Corps of Engineers
CRP	Conservation Reserve Program
CSGD	Cooperative State Grazing District
CSP	Concentrating or Concentrated Solar Power
CTGCN	Community Types Greatest Conservation Need
CWA	Clean Water Act
CWPP	Community Wildfire Protection Plan
DC	District of Columbia
DEQ	Department of Environmental Quality
DFC	Desired Future Condition
DM	Departmental Manual
DNRC	Montana Department of Natural Resources and Conservation

DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DPS	Distinct Population Segment
EA	Environmental Assessment
EDDI	Economic Development District, Incorporated
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
ESR	Emergency Stabilization and Rehabilitation
et seq.	And the Following
EVT	Existing Vegetation Type
FAC	Facultative
FACW	Facultative Wetland
FAMS	Facility Asset Management System
FAR	Functioning at Risk Trend
FAS	Fishing Access Site
FCRPA	Federal Cave Resources Protection Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLAME	Federal Land Assistance, Management, and Enhancement Act of 2009
FLPMA	Federal Land Policy and Management Act
FLREA	Federal Lands Recreation Enhancement Act
FMP	Fire Management Plan
FMU	Fire Management Unit
FNWA	Federal Noxious Weed Act
FO	Field Office
FPPA	Farmland Protection Policy Act
FRCC	Fire Regime and Condition Class
FS	United States Forest Service
FWS	United States Fish and Wildlife Service

FY	Fiscal Year
GBCS	Grizzly Bear Conservation Strategy
GHG	Atmospheric Greenhouse Gas
GIS	Geographic Information System
gpm	Gallons per Minute
GPS	Global Positioning System
GRSG	Greater Sage-grouse
GS	United States Geological Survey
H ₂ S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
HFI	Healthy Forest Initiative
HFRA	Healthy Forests Restoration Act
HMM	Hazardous Materials Management
HUC	Hydrologic Unit Code
IB	Information Bulletin
IBA	Important Bird Area
IBLA	Interior Board of Land Appeals
ID	Interdisciplinary
IM	Instruction Memorandum
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPA	Important Plant Area
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
ISA	Instant Study Area
IWM	Integrated Weed Management
<i>JVP RMP</i>	<i>Judith-Valley-Phillips Resource Management Plan</i>
Kw	Soil Erodibility Factor
LAC	Limits of Acceptable Change
LCAT	Local Climate Analysis Tool
LCNHT	Lewis and Clark National Historic Trail
LFO	Lewistown Field Office
LND	Lands Not Designated as Recreation Management Areas
LRMP	Lewistown Resource Management Plan

LUP	Land Use Plan
LWC	Lands with Wilderness Characteristics
LWCF	Land and Water Conservation Fund Act of 1974
MAAQs	Montana Ambient Air Quality Standards
MAQP	Montana Air Quality Permit
MBF	Thousand Board Feet
MBMG	Montana Bureau of Mines and Geology
MBWG	Montana Bat Working Group
MDAB	Montana Dakotas Access Board
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation
MFISH	Montana Fisheries Information System
MFP	Management Framework Plan
MFWP	Montana Fish, Wildlife and Parks
Mg/L	Milligrams per Liter
MIS	Management Information System
MLA	Mineral Leasing Act
MLRA	Major Land Resource Areas
MMBF	Million Board Feet
MNHP	Montana Natural Historic Program
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
Mph	Miles per Hour
MT	Montana
MWA	Montana Wilderness Association
N ₂ O	Nitrous Oxide
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Disposition Program
NASIS	National Soils Information System
NCDE	Northern Continental Divide Ecosystem
NCS	National Conservation System)
NCSHPO	National Council of SHPOs

NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NF	Nonfunctioning
NFP	National Fire Plan
NGSS	National Geographic Soil Survey
NHPA	National Historic Preservation Act
NHT	National Historic Trail
NIA	Notice of Intent to Abandon
NIFC	National Interagency Fire Center
NISIMS	National Invasive Species Information Management System
NO	Nitrogen Dioxide
NO _x	Nitrogen Oxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOS	Notice of Staking
NPDES	National Pollution Discharge Elimination System
NPNST	Nez Perce National Historic Trail
NPS	National Park Service or Native Plant Society or Nonpoint Source
NR	National Register
NRCS	Natural Resources Conservation Service
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
NST	National Scenic Trail
NTIS	National Technical Information Service
NTSA	National Trails System Act of 1968
NVC	National Vegetation Classification
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
NWSRS	National Wild and Scenic Rivers System
O	Ozone

OBL	Obligate Wetland
OFM	Outcome-focused Management
OHV	Off-Highway Vehicle
ONA	Outstanding Natural Area
ORV	Outstandingly Remarkable Value
Pb	Lead
PCA	Primary Conservation Area
PCPI	Per Capita Personal Income
PDM	Pre-disaster Mitigation Plan
PFC	Proper Functioning Condition
PFYC	Potential Fossil Yield Classification
PL	Public Law
PLO	Public Land Order
PM	Particulate Matter
PNC	Potential Natural Community
PPI	Producer Price Index
ppm	Parts per Million
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
PSOC	Potential Species of Concern
PSQ	Probable Sale Quantity
PV	Photovoltaic
R	Rural
R&PP	Recreation and Public Purposes Act
R&VS	Recreation and Visitor Services
RAC	Resource Advisory Council
REA	Rapid Ecoregional Assessment
RFD	Reasonably Foreseeable Development
RMA	Recreation Management Area
RMIS	Recreation Management Information System
RMP	Resource Management Plan
RMS	Rangeland Management Specialist
RN	Roaded-natural

ROC	Rate of Change
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	Right-of-Way
S&Gs	Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota
SAMP	Special Area Management Plan
SAR	Search and Rescue
SEZ	Solar Energy Zone
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SIR	Supplementary Information Report
SMA	Surface Management Agency
SMU	Soil Mapping Unit
SMZ	Streamside Management Zone
SO	Sulphur Dioxide
SOC	Species of Concern
SPM	Semi-primitive Motorized
SPNM	Semi-primitive Nonmotorized
SRA	Subsequent Report of Abandonment
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SSA	Soil Survey Area
SSP	Special Status Plants
SSS	Special Status Species
SSURGO	Soil Survey Geographical Data
STATSGO	State Soil Geographical Data
SWPA	Source Water Protection Area
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
tcf	Trillion Cubic Feet
TDS	Total Dissolved Solids
TMA	Travel Management Area
TMDL	Total Maximum Daily Load

TPCC	Timber Production and Capability Classification
TPI	Total Personal Income
Tpy	Tons Per Year
UMNWSR	Upper Missouri National Wild and Scenic River
UMRBNM	Upper Missouri River Breaks National Monument
US	United States
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
VOC	Volatile Organic Compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WDFZ	Western District Fire Zone
WEG	Wind Erodibility Group
WEI	Wind Erosion Index
WFLC	Wildland Fire Leadership Council
WFSA	Wild Fire Situation Analysis
WMA	Weed Management Plan
WNS	White-nose Syndrome
WNV	West Nile Virus
WO	Washington Office
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WSR Act	Wild and Scenic River Act of 1968
WSRA	Wild and Scenic Rivers Act
WRCC	Western Regional Climate Center
WUI	Wildland Urban Interface

GLOSSARY

-A-

ABANDONED MINE LANDS: Inactive or abandoned mines located on or near public land where the owner or operator cannot be established, has no financial assets, or cannot assist with the reclamation of these mine sites.

ADVERSE OR NEGATIVE: An effect that is detrimental or causes harm to a specific resource or resource use. Could be used in short-term, long-term, or both short- and long-term contexts.

ACCELERATED EROSION: Soil loss above natural levels resulting directly from human activities. Because of the slow rate of soil formation, accelerated erosion can lead to a permanent reduction in plant productivity.

ACTIVE USE: The current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary nonuse or suspended use of forage within all or a portion of an allotment.

ACTIVITY PLAN: Site-specific plan which precedes actual development. This is the most detailed level of Bureau of Land Management (BLM) planning, and is also referred to as project level or implementation level planning.

ACTUAL USE: The amount of animal unit months consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

ADMINISTRATIVE UNIT: Field office, resource area, district or state.

AFFECTED ENVIRONMENT: Natural, physical, and human-related environment that is sensitive to changes due to proposed actions.

AIR POLLUTION: The contamination of the atmosphere by any toxic or radioactive gases and particulate matter as a result of human activity.

AIR QUALITY: Refers to standards for various classes of land as designated by the Clean Air Act of 1978.

ALLOTMENT: An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally-managed, state-owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

ALLOTMENT CATEGORIZATION: Grazing allotments and rangeland areas used for livestock grazing are assigned to an allotment category during resource management planning. Allotment categorization is used to establish priorities for distributing available funds and personnel during plan implementation to achieve cost-effective improvement of rangeland resources. Categorization is also used to organize allotments into similar groups for purposes of developing multiple use prescriptions, analyzing site-specific and cumulative impacts, and determining trade-offs.

ALLOTMENT MANAGEMENT PLAN (AMP): A written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

ALLOWABLE SALE QUANTITY: The maximum quantity of timber that may be sold from the area of suitable land covered by the resource management plan for a specified time period specified by the plan.

ALTERNATIVE: In an environmental impact statement (EIS), one of a number of possible options for responding to the purpose and need for action.

ALLUVIUM: Any sediment deposited by flowing water, as in a riverbed, floodplain, or delta.

AMENDMENT: The process for considering or making changes in the terms, conditions, and decisions of approved resource management plans or management framework plans using the prescribed provisions for resource management planning appropriate to the proposed action or circumstances. Usually only one or two issues are considered that involve only a portion of the planning area.

ANALYSIS AREA: The geographic area defining the scope of analysis for a particular resource. This area may be larger than the project area when effects have the potential to extend beyond the boundaries of the proposed action.

ANALYSIS OF THE MANAGEMENT SITUATION (AMS): A comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

ANIMAL UNIT MONTH (AUM): A standardized measurement of the amount of forage necessary for the sustenance of one cow unit, or its equivalent, for 1 month; approximately 800 pounds of forage.

APPEAL: Application for review by a higher court.

APPLICATION FOR PERMIT TO DRILL (APD): Before beginning construction or the drilling of a well, the lessee or operator must file an application for permit to drill (APD) with BLM Great Falls Oil and Gas Field Station. A copy of the application is posted in the field station and Lewistown or Butte Field Office and, if applicable, in the office of the surface management agency (SMA) for a minimum of 30 days for review by the public. After 30 days, the application can be approved in accordance with (a) lease stipulations, (b) onshore oil and gas orders, and (c) onshore oil and gas regulations (43 CFR Part 3160) if it is administratively and technically complete.

APPROPRIATION: Public lands covered by an entry, settlement, claim, location, withdrawal, or reservation that sets the land apart for some particular use or disposal.

AQUATIC: Living or growing in or on the water.

AQUIFER: A water-bearing bed or layer of permeable rock, sand, or gravel capable of yielding large amounts of water.

ARCHAEOLOGICAL RESOURCE/REMAINS: A term with legal definition and application, meaning any material remains of human life or activities that are at least 100 years of age, and that are of archaeological interest.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC): An area within the public lands where special management attention is required to: (1) protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes; or (2) protect life and safety from natural hazards.

ARID: A condition of a region where precipitation is insufficient to support any but drought-adapted vegetation.

ARMORING: Placement of protective material for the primary purpose of reducing sediment into streams or other water bodies.

ASPECT: (1) The visual first impression of vegetation at a particular time or seen from a specific point.
(2) The predominant direction of the slope of the land.

ASSESSMENT: The act of evaluating and interpreting data and information for a defined purpose.

ATMOSPHERIC DEPOSITION: Air pollution produced when acid chemicals are incorporated into rain, snow, fog, or mist and fall to the earth. Sometimes referred to as “acid rain” and comes from sulfur oxides and nitrogen oxides, products of burning coal and other fuels, and from certain industrial processes. If the acid chemicals in the air are blown into areas where the weather is wet, the acids can fall to earth in the rain, snow, fog, or mist. In areas where the weather is dry, the acid chemicals may become incorporated into dust or smoke.

AUTHORIZED OFFICER: The federal employee who has the delegated authority to make a specific decision.

AUTHORIZED USE: Uses of public land that may be authorized include agriculture development, residential use (under certain conditions), business, industrial, and commercial uses, advertising; research projects, state National Guard maneuvers, and motion picture filming. Recreational concessions are considered business uses and may be authorized by lease. Timber harvest, livestock grazing, mineral extraction, and special recreation events, among other uses, are authorized under other regulations and not under Section 302 of the Federal Land Policy Management Act (FLPMA).

AVOIDANCE AREAS: Areas with sensitive resource values where rights-of-way would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

-B-

BACK COUNTRY BYWAYS: Vehicle routes that traverse scenic corridors utilizing secondary or back country road systems. National back country byways are designated by the type of road and vehicle needed to travel the byway.

BANKFULL CHANNEL: The elevation on the streambank where flooding begins. Bankfull discharge normally re-occurs every 1½ years. The bankfull stage corresponds to the discharge at which channel maintenance is effective.

BASIN: A depressed area having no surface outlet (topographic basin); a physiographic feature or subsurface structure that is capable of collecting, storing, or discharging water by reason of its shape and the characteristics of its confining material (water); a depression in the earth’s surface, the lowest part often filled by a lake or pond (lake basin); a part of a river or canal widened (drainage, river, or stream basin).

BENEFICIAL OR POSITIVE: An effect promoting a favorable result for a specific resource of resource use. Could be used in short-term, long-term, or both short- and long-term contexts.

BEST MANAGEMENT PRACTICES (BMPs): A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best management practices are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

BIG GAME: Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

BIG GAME ANALYSIS UNIT: Logical locations across the landscape to conduct analysis of big game winter range. These areas were broken out based on a combination of elk management units from *Montana's Elk Management Plan* (Montana Fish, Wildlife and Parks [MFWP] 2004) and watershed boundaries.

BIODIVERSITY: The diversity of living organisms considered at all levels of organization including genetics, species, and higher taxonomic levels, and the variety of habitats and ecosystems, as well as the processes occurring therein.

BIOLOGICAL ASSESSMENT: The gathering and evaluation of information on proposed endangered and threatened species and critical habitat and proposed critical habitat. Required when a management action potentially conflicts with endangered or threatened species, the biological assessment is the way federal agencies enter into formal consultation with the US Fish and Wildlife Service (FWS) and describe a proposed action and the consequences to the species the action would affect.

BIOLOGICAL WEED TREATMENT: These are treatments which involve living creatures, such as insects, sheep and goat grazing, plant pathogens, and biopesticides.

BIOMASS: Vegetative byproducts or materials leftover from stand treatments usually made up of all or portions of trees and woody shrubs, including limbs, tops, stumps, and stems. This term can refer to such material that can be gathered and transported to cogeneration plants, and there utilized for production of electricity.

BOARD FEET: A unit of solid wood 1 foot square and 1 inch thick (BF = board foot, MBF = thousand board feet, MMBF = million board feet).

BROWSE: To browse (verb) is to graze a plant; also, browse (noun) is the tender shoots, twigs, and leaves of trees and shrubs often used as food by livestock and wildlife.

BUFFER ZONE (STRIP): A protective area adjacent to an area of concern requiring special attention or protection. In contrast to riparian zones which are ecological units, buffer strips can be designed to meet varying management concerns.

BUNCHGRASS: Individual grasses that have the characteristic growth habit of forming a "bunch" as opposed to having stolens or rhizomes or single annual habit.

-C-

CANDIDATE SPECIES: Any species included in the *Federal Register* notice of review that are being considered for listing as threatened or endangered by the FWS.

CANOPY: Foliar layer(s) consisting of the crowns of trees or shrubs in a forest or woodland.

CARRYING CAPACITY: The maximum stocking rate possible without damaging vegetation or related resources.

CASUAL USE: Activities that involve practices that do not ordinarily disturb or damage the public lands, resources, or improvements and, therefore, do not require a right-of-way grant or temporary use permit (43 CFR 2800). Also, any short-term noncommercial activity that does not damage or disturb the public lands, their resources, or improvements, and that is not prohibited by closure of the lands to such activities (43 CFR 2920). Casual use generally includes collecting geochemical, rock, soil, or mineral specimens using hand tools, hand panning, and nonmotorized sluicing. It also generally includes use of metal detectors, gold spears, and other battery-operated devices for sensing the presence of minerals, and hand battery-operated dry washers. Casual use does not include use of mechanized earth-moving equipment, truck-mounted drilling equipment, suction dredges, or motorized vehicles in areas

designated as closed to off-road vehicles, chemicals, or explosives. It also does not include occupancy or operations where the cumulative effects of the activities result in more than negligible disturbance.

CENOZOIC: The most recent era of geologic history (65 million years ago until the present) during which the world's modern landforms, animals, and plants came into being.

CHANNEL: An open conduit, either naturally or artificially created, which periodically or continuously contains moving water or forms a connecting link between two bodies of water.

CHEMICAL WEED TREATMENT: These are treatments using additives, such as applying herbicides or changing soil nutrient ratios.

CLASSIFICATION: The authority of the Secretary of the Interior to examine land to see whether it is proper for entry, selection, or location.

CLASSIFICATION OF LANDS: The process of determining whether lands are more valuable or suitable for transfer or use under particular or various public land laws than for retention in federal ownership for management purposes.

CLEAN AIR ACT OF 1963 AND AMENDMENTS: Federal legislation governing air pollution.

CLIMAX: The culminating stage in plant succession for a given site where vegetation has reached a highly stable condition.

CLIMAX VEGETATION: The ecological vegetation community that represents the culminating stage or highest development of natural vegetative succession. The climax community often can perpetuate itself indefinitely unless disturbed by outside forces.

CLOSE (SEGREGATE): To remove land from operation of some or all of the public land laws for a given period of time.

CLOSED: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

CLOSED ROAD: Closed to motorized public access and subject to administrative or permitted uses based on case-specific exceptions (such as for mining claimants with existing claims accessed by existing routes). Routes identified as closed would have a route bed left intact in case they are needed for valid existing rights only, or in the extended future for administrative purposes. Closed routes would be open to nonmotorized use.

CODE OF FEDERAL REGULATIONS (CFR): The official, legal tabulation or regulations directing federal government activities.

COLLABORATION: A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands.

COMMERCIAL FOREST LAND: Forest land which is producing, or has a site capable of producing, at least 20 cubic feet/acre/year of a commercial tree species.

COMMON VARIETY MINERALS: Stone, gravel, pumice, pumicite, and cinders that, though possibly having value for trade, manufacture, the sciences, or the mechanical or ornamental arts, do not have a distinct, special value for such use beyond normal uses. On the public lands, such minerals are considered salable and are disposed of by sales or by special permits to local governments.

COMMUNITY: An assemblage of plant and animal populations in a common spatial arrangement.

COMMUNITY RECREATION-TOURISM MARKET: A community or communities dependent on public lands recreation or related tourism use, growth, or development. Major investments in facilities and visitor assistance are authorized within special recreation management areas (SRMAs) where the BLM's strategy is to target demonstrated community recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand for specific activity, experience, and benefit opportunities. These opportunities are produced through maintenance of prescribed natural resource or community setting character and by structuring and implementing management, marketing, monitoring, and administrative actions accordingly.

COMPOSITION (OF FOREST VEGETATION): The proportion of each tree species in a stand, expressed as a percentage of the total number, basal area, or volume of all tree species in the stand.

COMPREHENSIVE TRAVEL MANAGEMENT: The proactive interdisciplinary planning; on-the-ground management, and administration of travel networks (both motorized and nonmotorized) to ensure public access, natural resources, and regulatory needs are considered. It consists of inventory, planning, designation, implementation, education, enforcement, monitoring, easement acquisition, mapping and signing, and other measures necessary to provide access to public lands for a wide variety of uses (including uses for recreational, traditional, casual, agricultural, commercial, educational, and other purposes).

CONDITION CLASS: Departure from the historic fire regime, as determined by the number of missed fire return intervals, with respect to the historic fire return interval and the current structure and composition of the system resulting from alternations to the disturbance regime. Three classes categorize the current condition with respect to each of five historic fire regime groups. The relative risk of fire-caused loss of key components defines the system increases for each higher number condition. Class 1 level means little or no risk.

CONDITIONS OF APPROVAL: Conditions of approval are the conditions or provisions (requirements) under which an application for a permit to drill or a sundry notice is approved.

CONFORMANCE: That a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

CONIFER: A tree or shrub of the order Coniferae with cones and needle-shaped or scale-like leaves.

CONIFEROUS: Pertaining to conifers, which bear woody cones containing naked seeds.

CONNECTIVITY: The degree to which similar but separated vegetation components of a landscape are connected.

CONSERVATION AGREEMENT: A formal signed agreement between the FWS or National Marine Fisheries Service and other parties that implements specific actions, activities, or programs designed to eliminate or reduce threats or otherwise improve the status of a species. Conservation agreements can be developed at a state, regional, or national level and generally include multiple agencies at both the state and federal level, as well as tribes. Depending on the types of commitments the BLM makes in a conservation agreement and the level of signatory authority, plan revisions or amendments may be required prior to signing the conservation agreement, or subsequently, in order to implement the conservation agreement.

CONSERVATION STRATEGY: A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or

threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM sensitive species or that have been determined by the FWS or National Marine Fisheries Service to be federal candidates under the Endangered Species Act.

CONSISTENCY: The proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other Federal agencies, and State, and local governments to the extent practical within Federal law, regulation, and policy.

CONTIGUOUS: lands or legal subdivisions having a common boundary; lands having only a common corner are not contiguous.

COOPERATING AGENCY: Assists the lead federal agency in developing an Environmental Analysis or EIS. The Council on Environmental Quality (CEQ) regulations implementing NEPA defines a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. Any tribe or Federal, State, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

CORD: A measurement of volume used generally for fuel wood; represents a volume of 128 cubic feet (4 feet X 4 feet X 8 feet).

CORRIDOR: A wide strip of land within which a proposed linear facility could be located.

COUNCIL ON ENVIRONMENTAL QUALITY (CEQ): An Executive Office advisory council established by the National Environmental Policy Act of 1969 (NEPA) for review of federal program effects on the environment. They conduct environmental studies and advise the President on environmental matters.

COVER: Any form of environmental protection that helps an animal stay alive (mainly shelter from weather and concealment from predators).

COVER TYPE: The present vegetation composition of an area, described by the dominant plant species.

CRITICAL HABITAT: An area occupied by a threatened or endangered species “on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection.”

CULTURAL RESOURCE/ CULTURAL PROPERTY: a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) or traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit.

CULTURAL RESOURCE INVENTORY CLASSES:

- **Class I** – Existing data inventory: a study of published and unpublished documents, records, files, registers, and other sources, resulting in analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements, and are in large part chronicles of past land uses. They may have major relevance to current land use decisions.
- **Class II** – Sampling field inventory: a statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area.

- **Class III** – Intensive field inventory: a continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects (generally at 30 m intervals) until the area has been thoroughly examined.

CULTURAL WEED TREATMENT: These are treatments which involve human behavior, such as using quarantine, closure, or relocation of a particular activity to reduce weed spread, selective timing and choice of stock for grazing, containing livestock after they have grazed in a weed infested area, revegetation seed mix choices for rehabilitating new soil disturbances, land use choices, and public outreach methods.

CUMULATIVE IMPACT: The impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

-D-

“DE FACTO” WITHDRAWAL: An action that closes lands through a means other than formal withdrawal, e.g., application, classification, or land use planning decision.

DECIDUOUS: Pertaining to plants that shed all their leaves every year in a certain season.

DECISION AREA: Within the Lewistown Field Office and a small portion in the Butte Field Office (northern portion of Lewis and Clark County) planning area, the BLM administers approximately 654,025 acres of public land surface and 1,399,880 acres of federal mineral estate. All public land managed by the BLM within the planning area is referred to as the Decision Area.

DECOMMISSIONED ROAD: Route is closed and rehabilitated to eliminate resource impacts (for example, to eliminate erosion or to restore a riparian area if route is located within a riparian area) and is no longer useable for public or administrative uses.

DEEP SOILS: Soils that are 40 to 60 inches deep to bedrock.

DEFERRED ROTATION: Rotation grazing with regard to deferring pastures beyond the growing season if they were used early the prior year; or pastures that have been identified as needing deferment for resource reasons.

DENNING HABITAT: Habitat used during parturition and rearing of young until they are mobile. The common component appears to be large amounts of coarse woody debris, either down logs or root wads. Coarse, woody debris provides escape and thermal cover for kittens. Denning habitat may be found either in an older mature forest of conifer or mixed conifer/deciduous types, or in regenerating stands (>20 years since disturbance). Denning habitat must be located within the daily travel distance of foraging habitat (typical maximum daily distance for females is 3-6 miles).

DESIGNATED ROADS AND TRAILS: Specific roads and trails where some type of motorized vehicle use is allowed, either seasonally or year long.

DESIRED FUTURE CONDITION: Outcomes representing the long-term vision of the BLM with regard to the resources managed in the planning area on BLM land.

DESTINATION RECREATION-TOURISM MARKET: This market is composed of national or regional recreation-tourism visitors and other constituents who value public lands as recreation-tourism destinations. Major investments in facilities and visitor assistance are authorized within SRMAs where the BLM’s strategy is to target demonstrated destination recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand

for specific activity, experience, and benefit opportunities. These opportunities are produced through maintenance of prescribed natural resource setting character and by structuring and implementing management, marketing, monitoring, and administrative actions accordingly.

DEVELOPED RECREATION: Recreation that requires facilities and might result in concentrated use of an area (e.g., a campground).

DISPERSED RECREATION: Recreation activities of an unstructured type which are not confined to specific locations such as recreation sites. Examples of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

DISPOSAL: Transfer of public land out of federal ownership to another party through sale, exchange, Recreation and Public Purposes Act of 1926, Desert Land Entry, or other land law statutes.

DISTURBANCE: Events that alter the structure, composition, or function of terrestrial or aquatic habitats. Natural disturbances include drought, floods, wind, fires, wildlife grazing, and insects and pathogens. Human-caused disturbances include actions such as timber harvesting, fire, livestock grazing, road construction, and the introduction of exotic species.

DISTRIBUTION LINE: An electric power line operating at a voltage of less than 69 kilovolts.

DIVERSITY: The relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

DRAINAGE: The removal of excess water from land by surface or subsurface flow.

DRILLING: The operation of boring a hole in the earth, usually for the purpose of finding and removing subsurface formation fluids such as oil and gas.

-E-

EASEMENT: A right afforded a person or agency to make limited use of another's real property for access or other purposes.

ECOLOGICAL FUNCTION: The process through which the constituent living and nonliving elements of ecosystems change and interact, including biogeochemical processes and succession.

ECONOMICS: The study of allocation of limited resources, goods, and services among competing uses.

ECOSYSTEM: A complete, interacting system of living organisms and the land and water that make up their environment; the home places of all living things, including humans.

ELIGIBILITY (FOR WILD AND SCENIC RIVERS): A river is eligible for inclusion in the National Wild and Scenic River System if it is free flowing and has at least one river-related value that is considered outstandingly remarkable.

ELK MANAGEMENT UNIT: Designated by MFWP, establishes statewide elk management population objectives and divides Montana's elk habitat into 35 management units, each with its own elk management objectives and elk population targets.

EMERGENT VEGETATION: Aquatic plant species that are rooted in wetlands but extend above the water's surface.

ENCROACH: Plant succession in the absence of disturbance in areas where the plant type is not desired. Often associated with vegetative type conversion such as conifer colonization of grass or shrub meadows.

ENDANGERED SPECIES: Any plant or animal species which is in danger of extinction throughout all or a significant portion of its range as defined under the Endangered Species Act.

ENTRY: An application to acquire title to public lands.

ENVIRONMENTAL ASSESSMENT (EA): A concise public document that analyzes the environmental impacts of a proposed federal action and provides sufficient evidence to determine the level of significance of the impacts.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A detailed written statement required by NEPA when an agency proposes a major federal action significantly affecting the quality of the human environment.

ENVIRONMENTAL JUSTICE: Refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

EPHEMERAL AREA: Watershed land area that delivers surface water flow during spring runoff, rain, and snow storms to intermittent and perennial streams.

EROSION: The wearing away of the land surface by running water, wind, ice, or other geological agents.

EXCEPTION (OIL AND GAS): A one-time exemption to a lease stipulation. Exceptions are determined on a case-by-case basis.

EXCHANGE: A trading of public lands (surface and/or subsurface estates) that usually do not have high public value, for lands in other ownerships that do have value for public use, management, and enjoyment. The exchange may be for the benefit of other federal agencies as well as for the BLM.

EXCLUSION AREAS: Areas with sensitive resource values where rights-of-way would be prohibited.

EXPLORATION: The work of investigating a mineral deposit to determine, by geological surveys, geophysical surveys, geochemical surveys, boreholes, pits, and underground workings, if it is feasible to mine.

EXTENSIVE RECREATION MANAGEMENT AREA (ERMA): Areas where significant recreation opportunities and problems are limited and explicit recreation management is not required. Minimal management actions related to the Bureau's stewardship responsibilities are adequate in these areas.

-F-

FACULTATIVE (FAC): Plant species equally likely to occur in wetlands, riparian areas, or nonwetlands (estimated probability 34 percent-66 percent).

FACULTATIVE WETLAND (FACW): Plant species that usually occur in wetlands or riparian areas (estimated probability 67 percent-99 percent), but are occasionally found in nonwetlands or uplands.

FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976 (FLPMA): Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the Bureau's legislated authority, direction, policy, and basic management guidance.

FEDERAL POWER PROJECT RESERVATION: A reservation of public lands for use in a project developed under the jurisdiction of the Federal Power Commission.

FEDERAL REGISTER: A daily publication that reports Presidential and federal agency documents.

FIRE CONDITION CLASS: Categorizes and describes vegetation composition and structure conditions that currently exist inside the fire regime groups. Three classes serve as generalized wildfire risk rankings based on coarse-scale data. The risk components from unwanted, wildland fire increase from lowest risk - Condition Class 1, to highest risk - Condition Class 3.

FIRE FREQUENCY: How often fire burns a given area; often expressed in terms of fire return intervals. For example, a site might burn over every 5 to 15 years.

FIRE INTENSITY: Expression used to describe the power of wildland fires. More commonly described as the rate of energy released per unit length of the fire front.

FIRE MANAGEMENT PLAN (FMP): A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

FIRE MANAGEMENT ZONE: Administrative unit for wildland fire suppression for the execution of all logistical, aviation, and support activities within this geographical area.

FIRE PREPAREDNESS: Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

FIRE REGIMES: Periodicity and pattern of naturally occurring fires in a particular area or vegetative type, described in terms of frequency, biological severity, and aerial extent.

FIRE SEVERITY: A qualitative measure of the fire's immediate effects on the ecosystem. Relates to the extent of mortality and survival of plant and animal life, both above- and below-ground and to loss of organic matter.

FIRE SUPPRESSION: All work activities connected with fire extinguishing operations, beginning with discovery of a fire and continuing until the fire is completely out.

FISHERY: Habitat that supports the propagation and maintenance of fish.

FLOODPLAIN: The relatively flat area or lowlands adjoining a body of standing or flowing water which has been, or might be, covered by floodwater.

FLUID MINERALS: Fluid minerals include: oil, gas, coalbed natural gas, and geothermal resources.

FLUVIAL: Pertaining to streams or produced by stream action.

FORAGE: All browse and herbaceous foods available to grazing animals, which may be grazed or harvested for feeding.

FORB: An herbaceous plant that is not a grass, sedge, or rush.

FOREST ECONOMIC ANALYSIS SPREADSHEET TOOL (FEAST): A modeling tool used to assist in the development of economic impacts. The goal for a FEAST model is to assist both economists and planning specialists in completing economic impact analyses.

FOREST HEALTH: The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence, or unusual levels of insects and disease, and resilience to disturbance.

FOREST HEALTH TREATMENTS: Treatments that restore forest ecosystems or stands to a condition that sustains their complexity, function, and/or productivity while providing for human needs.

FOREST LAND: Land that is now, or has the potential of being, at least 10 percent stocked by forest trees (based on crown closure) or 16.7 percent stocked (based on tree stocking).

FORMATION: A body of rock identified by lithic characteristics and stratigraphic position; it is prevailing, but not necessarily, tabular and is mappable at the earth's surface or traceable in the subsurface.

FOSSIL: Mineralized or petrified form from a past geologic age, especially from previously living things.

FRAGMENTATION: The splitting or isolating of patches of similar habitat. Habitat can be fragmented by natural events or development activities.

FREE-FLOWING RIVER: Existing or flowing in a natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway.

FUEL LOADING: The weight of fuels in a given area, usually expressed in tons per acre, pounds per acre, or kilograms per square meter.

FUEL MANAGEMENT: Manipulation or reduction of fuels to meet forest protection and management objectives while preserving and enhancing environmental quality.

FUEL TREATMENT: The rearrangement or disposal of fuels to reduce the fire hazard.

FUEL TYPE: An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

FUNCTIONING AT RISK: Riparian-wetland areas that are in functional condition, but that have an existing soil, water, or vegetation attribute that makes them susceptible to degradation.

-G-

GAME SPECIES: Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fisherman under state or federal laws, codes, and regulations.

GENERAL ORDERS OF WITHDRAWALS: Executive Orders No. 6910 of November 26, 1934, and No. 6964 of February 5, 1935, which withdrew for classification all vacant public lands in the 11 western states and certain other public land states.

GEOCACHING: Geocaching is an outdoor adventure game for global position system (GPS) users. Participating in a cache hunt is an activity designed to take advantage of the features and capability of a GPS unit and enjoy the freedom of access to public land. The GPS users use the location coordinates to find the caches. Once found, a cache may provide the visitor with a variety of awards. The visitor is asked to sign a logbook and to leave or replace items they find in the cache.

GEOGRAPHIC INFORMATION SYSTEM (GIS): A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information.

GEOPHYSICAL EXPLORATION: The use of geophysical instruments and methods to determine subsurface conditions by analyzing such properties as specific gravity, electrical conductivity, or magnetic susceptibility.

GOAL: A broad statement of a desired outcome. Goals are usually not quantifiable and may not have established time frames for achievement.

GRAZING PLAN: A concisely written program of livestock grazing management including supportive measures, if required, designed to attain specific management goals in a grazing allotment. A grazing plan is prepared in consultation with the permittee(s), lessee(s), and other affected interests. Livestock grazing is considered in relation to other uses of the range and to renewable resources such as watershed, vegetation, and wildlife. A grazing plan establishes seasons-of-use, the number of livestock to be permitted, the range improvements needed, and the grazing system.

GRAZING PREFERENCE: A priority position for the purpose of receiving a grazing permit or lease.

GRAZING SYSTEM: The manipulation of livestock grazing to accomplish a desired result.

GREEN TONS: 2,000 pounds of undried, biomass material.

GROUNDWATER: Water contained in pore spaces of consolidated and unconsolidated surface material.

GUIDELINES: Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory.

-H-

HABITAT: A specific set of physical conditions that surround a species, group of species, or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover, and living space. The complete suite of biotic and abiotic components of the environment where an animal lives.

HABITAT CONNECTIVITY: Vegetative cover in sufficient quantity and arrangement to allow for the movement of wildlife.

HABITAT DIVERSITY: The variation in types, sizes, and shapes of landscape elements or vegetation types.

HABITAT TYPE: A site classification of all land areas potentially capable of producing similar plant communities at the climax phase of succession.

HAZARDOUS FUEL: Excessive live or dead wildland fuel accumulations that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

HEALTHY FORESTS INITIATIVE OF 2002: Presidential direction to the Departments of Agriculture and the Interior to improve regulatory processes and management efficiency in reducing the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The initiative is based on sound science and helps care for forests and rangelands, reduce the risk of catastrophic fire to communities, helps save the lives of firefighters and citizens, and protects threatened and endangered species.

HEAVY METAL: Any of the metals that react readily with dithizone, including zinc, copper, cobalt, lead, bismuth, gold, cadmium, iron, manganese, nickel, tantalum, tellurium, platinum, and silver.

HERBACEOUS: Pertaining to or characteristic of an herb (fleshy-stem plant) as distinguished from the woody tissue of shrubs and trees.

HIGH OR MAJOR: An effect is severe; there would be a highly noticeable, long-term or permanent measurable change.

HISTORIC: Period wherein nonnative, cultural activities took place, based primarily upon European roots, having no origin in the traditional Native American culture(s).

HISTORIC PROPERTY OR HISTORIC RESOURCE: “Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. The term includes, for purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term ‘eligible for inclusion in the National Register’ includes both properties formally determined as such by the Secretary of Interior and all other properties that meet National Register listing criteria” (quoted from 36 CFR 900.2[e]).

HOME RANGE: The area in which an animal travels in the scope of natural activities.

HORIZON (SOIL): A layer of soil or soil material roughly parallel to the land surface and differing from adjoining genetically-related layers in physical, chemical, and biological properties or characteristics, such as color, structure, and texture.

HUMMOCK: A low, rounded hill, knoll, or hillock; a tract of wooded land higher than a nearby swamp or marsh.

HYDROLOGIC CONDITION: The current state of the processes controlling the yield, timing, and quality of water in a watershed. Each physical and biologic process that regulates or influences stream flow and groundwater character has a range of variability associated with the rate or magnitude of energy and mass exchange. At any point in time, each of these processes can be defined by their current rate or magnitude relative to the range of variability associated with each process. Integration of all processes at one time represents hydrologic condition.

HYDROLOGIC UNIT CODE (HUC): A coding system developed by the US Geological Survey to map geographic boundaries of watersheds by size.

HYDROPHYTIC: Water-loving; ability to grow in water or saturated soils.

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IGNEOUS ROCK: Rock, such as granite and basalt, which has solidified from a molten or partially molten state.

IMPACT: A modification of the existing environment caused by an action (such as construction or operation of facilities).

IMPACTS (OR EFFECTS): Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

IMPLAN: The IMPLAN Model is an input-output impact model system which provides users with the ability to define industries, economic relationships, and projects to be analyzed. This can be used to assess the economic impacts of resource management decisions, facilities, or industries, or changes in their level of activity in a given area. The current IMPLAN input-output database and model is maintained and sold by MIG, Inc. (Minnesota IMPLAN Group).

IMPLEMENTATION DECISIONS: Decisions that take action to implement land use plan decisions. They are generally appealable to Interior Board of Land Appeals.

IMPLEMENTATION PLAN: A site-specific plan written to implement decisions made in a land use plan. An implementation plan usually selects and applies best management practices to meet land use plan objectives. Implementation plans include both activity plans and project plans.

INDIAN TRIBE: Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status.

INDIAN TRUST RESOURCES: Those natural resources, either on or off Indian lands, retained by or reserved by or for Indian tribes through treaties, statutes, judicial decisions, and Executive Orders, which are protected by a fiduciary obligation on the part of the United States.

INDICATOR (SPECIES): A species of animal or plant whose presence is a fairly certain indication of a particular set of environmental conditions. Indicator species serve to show the effects of development actions on the environment.

INDIRECT EFFECTS: Secondary effects that occur in locations other than the initial action or later in time.

INFILTRATION: The downward entry of water into the soil or other material.

INITIAL (FIRE) ATTACK: An aggressive fire suppression action consistent with firefighter and public safety and values to be protected.

INTEGRATED PEST MANAGEMENT (IPM): A long-standing, science-based, decisionmaking process that identifies and reduces risks from pests and pest management-related strategies. It coordinates the use of pest biology, environmental information, and available technology to prevent unacceptable levels of pest damage by the most economical means, while posing the least possible risk to people, property, resources, and the environment. Integrated pest management provides an effective strategy for managing pest in all arenas from developed agricultural, residential, and public areas to wild lands. Integrated pest management serves as an umbrella to provide an effective, all encompassing, low-risk approach to protect resources and people from pests. The Bureau Departmental Manual 517 (Pesticides) defines integrated pest management as, "a sustainable approach to managing pest by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks."

INTEGRATED WEED MANAGEMENT: This is a decision support system involving deliberate selection, integration, and implementation of effective weed management tactics. It utilizes cost/benefit analysis and takes into consideration public interests and social, economical, and ecological impacts in the decision-making process.

INTERDISCIPLINARY TEAM: A group of individuals with different training representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more disciplines or Bureau program interests.

INTERIM MANAGEMENT POLICY: Policy that guides management of the BLM's wilderness study areas. The policy balances the various uses of wilderness study areas with the requirement to protect the lands' wilderness values.

INTERIOR BOARD OF LAND APPEALS (IBLA): The Department of the Interior (DOI), Office of Hearings and Appeals board that acts for the Secretary of the Interior in responding to appeals of decisions on the use and disposition of public lands and resources. Because the Interior Board of Land Appeals acts for,

and on behalf of, the Secretary of the Interior, its decisions usually represent the Department's final decision but are subject to the courts.

INTERMITTENT STREAM: A stream that flows only at certain times of the year when it receives water from springs or from some surface sources such as melting snow in mountainous areas. During the dry season and throughout minor drought periods, these streams will not exhibit flow. Geomorphological characteristics are not well defined and are often inconspicuous. In the absence of external limiting factors such as pollution and thermal modifications, species are scarce and adapted to the wet and dry conditions of the fluctuating water level.

INVASIVE PLANTS: Plants which are invasive species.

INVASIVE SPECIES: Organisms that have been introduced into an environment where they did not evolve. Executive Order 13112 focuses on organism whose presence is likely to cause economic harm, environmental harm, or harms to human health.

INVERSION: The state of the atmosphere in which a layer of cool air is trapped near the earth's surface by an overlying layer of warm air so that the lower layer cannot rise. Serious air pollution problems may result from air pollutants being emitted into the limited mixing depth below the inversion.

IRREVERSIBLE COMMITMENT OF RESOURCES: Result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame.

IRRETRIEVABLE COMMITMENT OF RESOURCES: Result from actions in which resources are considered permanently lost.

-J-

JURISDICTION: The legal right to control or regulate use of a transportation facility. Jurisdiction requires authority, but not necessarily ownership.

-K-

K FACTOR: A soil erodibility factor used in the universal soil loss equation that is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. Estimation of the factor takes several soil parameters into account including soil texture, percent of sand greater than 0.10 millimeter, soil organic matter content, soil structure, soil permeability, clay mineralogy, and coarse fragments. K factor values range from .02 to .64, the greater values indicating the highest susceptibilities to erosion.

KARST: An area of limestone formations characterized by sinks, ravines, and underground streams.

-L-

LAND CLASSIFICATION: A process for determining the suitability of public lands for certain types of disposal or lease under the public land laws, or for retention under multiple use management.

LAND TENURE ADJUSTMENTS: Ownership or jurisdictional changes. To improve the manageability of BLM-administered lands and their usefulness to the public, the Bureau has numerous authorities for repositioning lands into a more consolidated pattern, disposing of lands, and entering into cooperative management agreements. These land pattern improvements are completed primarily through the use of land exchanges, but also through land sales, through jurisdictional transfers to other agencies, and through the use of cooperative management agreements and leases.

LAND USE ALLOCATION: The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions.

LAND USE PLAN (LUP): A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of the FLPMA; an assimilation of land use plan-level decisions developed through the planning process, regardless of the scale at which the decisions were developed.

LAND USE PLAN BOUNDARY: The geographic extent of a resource management plan.

LAND USE PLAN DECISION: Establishes desired outcomes and the actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals.

LAND UTILIZATION (LU) PROJECT LANDS: Privately owned, submarginal farmlands incapable of producing sufficient income to support the family of a farm owner which were purchased under Title III of the Bankhead-Jones Farm Tenant Act of July 22, 1937. These acquired lands became known as land utilization projects and were subsequently transferred from jurisdiction of the US Department of Agriculture to the US Department of the Interior. They are now administered by the BLM.

LATE SEASON: Late summer or fall grazing.

LEASABLE MINERALS: Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulphur, potassium, and sodium minerals, and oil, gas, and geothermal.

LEASE: (1) A legal document that conveys to an operator the right to drill for oil and gas; (2) the tract of land, on which a lease has been obtained, where producing wells and production equipment are located.

LEASE (OCCUPANCY): A usually long-term authorization to possess and use public lands for a fixed period of time (43 CFR 2910).

LEASE STIPULATION (OIL AND GAS): Conditions of lease issuance that provide protection for other resource values or land uses by establishing authority for substantial delay or site changes or the denial of operations within the terms of the lease contract. The authorized officer has the authority to relocate, control timing, and impose other mitigation measures under Section 6 of the Standard Lease Form. Lease stipulations clarify the Bureau's intent to protect known resources or resource values.

LESSEE: A person or entity holding record title in a lease issued by the United States (see 43 CFR 3160.05).

LESSEE (GRAZING): Holder of a valid lease that authorizes grazing use of the public lands outside of a grazing district.

LEK: An assembly area where birds, especially sage-grouse, carry on display and courtship behavior.

LIMITED AREAS OR TRAILS: Designated areas or trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails.

Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

LINKAGE: Route that permits movement of individual plants (by dispersal) and animals from a habitat type to another similar habitat type.

LITTER: The uppermost layer of organic debris on the soil surface, essentially the freshly fallen or slightly decomposed vegetal material.

LOAMY: Intermediate in texture and properties between fine- and coarse-textured soils.

LOCATABLE MINERALS: Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

LODE MINING: Mining of a mineral deposit in solid rock.

LONG TERM: Effects lasting more than 10 years.

LOW OR MINOR: An effect is slight but detectable; there would be a small change.

LYNX HABITAT: Lynx occur in mesic coniferous forest that have cold, snowy winters and provide a prey base of snowshoe hare. In the Rocky Mountains, primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Englemann spruce. Secondary vegetation that, when interspersed within subalpine forests, may also contribute to lynx habitat, includes cool, moist Douglas-fir, grand fir, western larch, and aspen forest. Dry forest types (ponderosa pine, climax lodgepole pine) do not provide lynx habitat. Primary elevations for lynx habitat are between 1500-2000 meter (4,920–6,560 feet) elevation zones in the northern Rockies.

-M-

MANAGEMENT DECISION: A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

MANAGEMENT FRAMEWORK PLAN (MFP): Planning decision document prepared before the effective date of the regulations implementing the land use planning provisions of FLPMA which establishes, for a given area of land, land-use allocations, coordination guidelines for multiple use, and objectives to be achieved for each class of land use or protection.

MANAGEMENT OPPORTUNITIES: A component of the Analysis of the Management Situation (AMS); actions or management directions that could be taken to resolve issues or management concerns.

MEDIUM OR MODERATE: An effect is readily apparent; there would be a measurable change that could result in a small but permanent change.

MID-TERM: Effects lasting 5 to 10 years.

MILL: A plant in which ore is treated for the recovery of valuable minerals or valuable minerals are concentrated into a smaller bulk for shipping to a smelter or other reduction works.

MINE: An opening or excavation in the earth for extracting minerals.

MINERAL: Any solid or fluid inorganic substance that can be extracted from the earth for profit.

MINERAL ENTRY: The filing of a claim on public land to obtain the right to any minerals it may contain.

MINERAL ESTATE: The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

MINERAL MATERIALS: Materials such as common varieties of sand, stone, gravel, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Mineral Materials Act of 1947, as amended.

MINERAL WITHDRAWAL: A formal order that withholds federal lands and minerals from entry under the Mining Law of 1872 and closes the area to mineral location (staking mining claims) and development.

MINIMIZE: To reduce the adverse impact of an operation to the lowest practical level.

MINING CLAIM: A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A single mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

MINING DISTRICT: An area, usually designated by name, with described or understood boundaries, where minerals are found and mined under rules prescribed by the miners, consistent with the Mining Law of 1872.

MITIGATION MEASURES: Methods or procedures that reduce or lessen the impacts of an action.

MONITORING PLAN: The process of tracking the implementation of land use plan decisions and collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions.

MODIFICATION: A change in a plan of operations that requires some level of review by the BLM because it exceeds what was described in the approved plan of operations.

MODIFICATION (OIL AND GAS): A change to the provision of a lease stipulation, either temporarily or for the term of the lease.

MONITORING PLAN: The process of tracking the implementation of land use plan decisions.

MULTIPLE USE: The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the lands for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some lands for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long- term needs of future generations for renewable and nonrenewable resources including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the lands and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or greatest unit output.

-N-

NATIONAL AMBIENT AIR QUALITY STANDARDS: The allowable concentrations of air pollutants in the ambient (public outdoor) air. National ambient air quality standards are based on the air quality criteria and divided into primary standards (allowing an adequate margin of safety to protect the public health) and secondary standards (allowing an adequate margin of safety to protect the public welfare). Welfare

is defined as including (but not limited to) effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility, climate, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA): An act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the nation, and establishes the CEQ.

NATIONAL REGISTER OF HISTORIC PLACES: A register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology and culture; established by the Historic Preservation Act of 1966 and maintained by the Secretary of the Interior.

NATIONAL WILD AND SCENIC RIVERS SYSTEM: A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

NEGLIGIBLE: An effect at the lower level of detection; there would be no measurable change. Effects may not be readily noticeable.

NEUTRAL: An effect that is neither beneficial nor adverse to a specific resource or resource use.

NO SURFACE OCCUPANCY: A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

NONFUNCTIONAL CONDITION: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or woody debris to dissipate energies associated with flow events and, thus, are not reducing erosion, improving water quality, etc.

NOXIOUS WEEDS: A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

NUTRIENT CYCLING: The circulation of chemical elements such as nitrogen, oxygen, carbon, and phosphorus in specific pathways from the abiotic (not involving or produced by organisms) portions of the environment into organic substances in plants and animals and then back into abiotic forms.

-O-

OBJECTIVE: A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement.

OBLIGATE: Essential, necessary, unable to exist in any other state, mode, or relationship.

OBLIGATE WETLAND (OBL): Plant species that occur almost always (estimated probability greater than 99 percent) under natural conditions in wetlands or riparian zones.

OFF-HIGHWAY VEHICLE (OHV): Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious, registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies.

OLD FOREST STRUCTURE: Physical forest or woodland characteristics that contribute to the structure, composition or function of forested stands for a particular forest type. These characteristics include large and old tree components, accumulations of dead wood components such as standing snags and/or downed logs, occurrence of climax plant species or seral trees with a common decadent attribute such as broken or deformed tops and rotten boles, wide variation in tree age classes and stocking levels, and multiple canopy layers.

OLD-GROWTH: Forested stands in late successional stages of development meeting the main characteristics or old forest structures that are described by the forest type for the East-side Montana Zone in Old-Growth Forest Types of the Northern Region (Green, 1992).

OPEN: Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs.

OPEN ROAD: Open year-round to public and administrative uses.

OPEN ROAD WITH RESTRICTIONS: Open to public and administrative uses with seasonal and/or vehicle-type limitations.

OPENING ORDER: Returning land to the operation of some or all of the public land laws. It is normally done at the same time as revocation; opens lands to the operation or partial operation of the public land laws. An opening order may be a part of the revocation order and need not be a separate document.

OPERATOR: Any person who has taken formal responsibility for the operations conducted on the leased lands.

ORE: A mineral deposit of high enough quality to be mined at a profit.

OUTSTANDINGLY REMARKABLE (RIVER) VALUES: Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act are “scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values” Other similar values which may be considered include: botanical, hydrological, paleontological, or scientific. Professional judgment is used to determine whether values exist to an outstandingly remarkable degree.

OVERSTORY: The layer of foliage in a forest canopy, often the uppermost layer(s) consisting of the crowns of trees or shrubs.

OZONE: A faint, blue gas produced in the atmosphere from chemical reactions of burning coal, gasoline, and other fuels and chemicals found in products such as solvents, paints, and hairsprays.

-P-

PALEONTOLOGICAL RESOURCES (FOSSILS): The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are important for understanding past environments, environmental change, and the evolution of life.

PALEONTOLOGY: A science dealing with the lifeforms of past geological periods as known from fossil remains.

PARENT MATERIAL (SOIL): The unconsolidated, more or less chemically weathered, mineral or organic matter from which the upper level of the soil profile has developed.

PATENT: The instrument by which the federal government conveys title to the public lands.

PERENNIAL STREAM: A natural course that confines and conducts water that flows continuously during all seasons of the year.

PERMIT: A short-term (generally under 3 years), revocable authorization to use public lands for specific purposes. The BLM issues permits under 43 CFR 2910.

PERMITTED USE: The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease, expressed in animal unit months (AUMs).

PERMITTEE: Holder of a valid permit that authorizes certain uses of the public lands (e.g., for grazing).

PERMITTEE (GRAZING): Holder of a valid permit that authorizes grazing use of the public lands within a grazing district.

PETROGLYPH: A figure, design, or indentation carved, abraded, or pecked into a rock.

PHYSICAL WEED TREATMENT: These are treatments which use manual labor, mechanical equipment, or fire, such as hand pulling, mowing or tilling, and prescribed burning.

PICTOGRAPH: A figure or design painted onto a rock.

PLACER: An alluvial deposit of sand and gravel containing valuable minerals such as gold.

PLACER MINING: A method of mining in which the overburden is removed to expose gold-bearing gravel deposits beneath. The gravel is then sluiced to separate the gold.

PLAN: A document that contains a set of comprehensive, long-range decisions concerning the use and management of Bureau-administered resources in a specific geographic area.

PROBABLE SALE QUANTITY (PSQ): The PSQ is the allowable harvest level that can be maintained without decline over the long term if the schedule of harvests and regeneration are followed. PSQ recognizes a level of uncertainty in meeting the determined level; this uncertainty is typically based on other environmental factors that preclude harvesting at a particular time (for example, because of watershed or habitat concerns). A PSQ is not a commitment to offer for sale a specific level of timber volume every year.

PLANNING AREA: A geographical area for which land use and resource management plans are developed and maintained. The planning area for the Lewistown Resource Management Plan (RMP) includes the Lewistown Field Office (LFO) boundary in central Montana (encompassing Cascade, Chouteau, Fergus, Judith Basin, Meagher, Petroleum, Pondera, and Teton Counties) minus the Upper Missouri River Breaks National Monument, and the northern portion of Lewis and Clark County administered by the Butte Field Office.

PLANNING CRITERIA: The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decisionmaking, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

PLANNING DECISION (LAND USE PLAN DECISION): Establishes desired outcomes and the actions needed to achieve them. Decisions are reached using the BLM planning process. When they are

presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals.

PLAY (OIL AND GAS): Defined as a set of known or postulated oil and/or gas accumulations sharing similar geologic, geographic, and temporal properties such as source rock, migration pathway, trapping mechanism, and hydrocarbon type.

POPULATION: Within a species, a distinct group of individuals that tend to mate only with members of the group. Because of generations of inbreeding, members of a population tend to have similar genetic characteristics.

POTENTIAL NATURAL VEGETATION: The vegetation that would become established if all successional sequences were completed without interferences by man under the present environmental conditions.

POWER SITE CLASSIFICATION: A classification made by the Federal Power Commission that is a segregation against the operation of the public land laws for lands that are needed or have potential for power projects and associated transmission lines. Lands classified to benefit transmission lines are open to the operation of the public land laws, subject to their use for transmission lines.

POWER SITE RESERVE: A reservation of public lands that have potential value for power development.

PRECAMBRIAN: Pertaining to the earliest era of geological history, extending from 4.5 billion to 540 million years ago and encompassing 7/8 of the earth's history. Just before the end of the Precambrian, complex multicellular organisms, including animals, evolved.

PRECIOUS METAL: A general term for gold, silver, or any of the minerals of the platinum group.

PRE-COMMERCIAL THINNING: A thinning that does not yield trees of commercial value; usually designed to reduce stocking in order to concentrate growth on the more desirable trees or to meet desired vegetation and/or fuel loading conditions.

PREHISTORIC: Refers to the period wherein Native American cultural activities took place which were not yet influenced by contact with historic nonnative culture(s).

PRESCRIBED FIRE: The introduction of fire to an area under regulated conditions for specific management purposes.

PRESCRIPTION LIVESTOCK GRAZING (GRAZING): Grazing use authorized on land designated or not designated for livestock grazing designed to accomplish a specific purpose. For example, authorizing sheep and goats to graze a piece of land as a biological control agent to treat noxious weeds. Prescription grazing would normally be authorized on a temporary nonrenewable basis.

PREVENTION OF SIGNIFICANT DETERIORATION (PSD): A regulatory program based not on the absolute levels of pollution allowable in the atmosphere but on the amount by which a legally defined baseline condition will be allowed to deteriorate in a given area. Under this program, geographic areas are divided into three classes, each allowing different increases in nitrogen dioxide, particulate matter, and sulfur dioxide concentrations.

PREY BASE: Populations and types of prey species available to predators.

PRIMITIVE AND UNCONFINED RECREATION: Nonmotorized, nonmechanized and undeveloped types of recreational activities.

PRIMITIVE ROAD: A linear route managed for use by four-wheel drive or high clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

PRIORITY HABITATS: Priority habitats would include habitat for all special status species as well as riparian areas, dry savannah forest, special habitats including caves, cliffs, snags, and down woody material, sagebrush, bitterbrush communities, and mountain mahogany communities.

PRIORITY SPECIES: Priority species are those wildlife, fish, or plant species that the BLM has determined to be unique or significant based on at least one of the following factors: density, diversity, population size, public interest, remnant character, or age.

PRIVATE EXCHANGE: A land exchange between the federal government and any landowner other than a state.

PROJECT PLAN: A type of implementation plan. A project plan typically addresses individual projects or several related projects. Examples of project plans include prescribed burn plans, trail plans, and recreation site plans.

PROJECT AREA (MINERALS): The area of land upon which an operator conducts mining operations, including the area needed for building or maintaining of roads, transmission lines, pipelines, or other means of access.

PROJECT AREA (VEGETATION): An area of land where some type of management activity would occur; encompasses a region defined by logical boundaries such as: watersheds, ridges, highways, or ownership blocks of BLM lands. The project area can be both the analysis area and a starting point to determine where treatments or activities should occur, and includes the area needed for supporting structures and activities such as roads, transmission lines, or pipelines.

PROPER FUNCTIONING CONDITION (PFC): Ecosystems are in PFC when they function within their historic range of variability.

PROPER FUNCTIONING CONDITION FOR LENTIC AREAS: Riparian-wetland areas are functioning properly when adequate vegetation, landform, or debris is present to:

- dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality;
- filter sediment and aid floodplain development;
- improve floodwater retention and groundwater recharge;
- develop root masses that stabilize islands and shoreline features against cutting action; restrict water percolation;
- develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterbird breeding, and other uses;
- support greater biodiversity.

PROPER FUNCTIONING CONDITION FOR LOTIC AREAS: A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to:

- dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve floodwater retention and groundwater recharge;
- develop root masses that stabilize streambanks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses;
- support greater biodiversity.

PROPOSED ACTION: A project or set of activities that a federal agency intends to implement, as defined in NEPA regulations.

PROPOSED PLANNING SCENARIO: Using comments received during the initial scoping period, the BLM interdisciplinary team developed the “Proposed Planning Scenario,” to describe possible management prescriptions and goals for individual programs.

PROTEST: Application for review by a higher administrative level.

PUBLIC INVOLVEMENT: Any process designed to broaden the information base upon which agency decisions are made by informing the public about BLM activities, plans, and decisions to encourage public understanding about participation in the planning processes which leads to final decisionmaking.

PUBLIC LAND: Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM, except lands located on the Outer Continental Shelf and land held for the benefit of Indians, Aleuts, and Eskimos.

PUBLIC LAND LAWS: A body of laws that regulates the administration of the public lands and the resources thereon.

PUBLIC LAND ORDER (PLO): Creating, continuing, modifying, or revoking a withdrawal or reservation that has been issued by the Secretary of the Interior pursuant to his delegations of authority.

PUBLIC PURPOSE: A use in which the public has an interest, affecting its safety, health, morale, and welfare, but not including use for habitation, cultivation, trade, or manufacturing.

PUBLIC VALUE: An asset held by, service performed for, or benefit accruing to the people at large.

-Q-

QUARRY: An open or surface working, usually for the extraction of stone, slate, limestone, etc.

QUARRY SITE: Place where minerals occur which were a source of raw material for prehistoric/historic industries.

-R-

RANGELAND: Land used for grazing by livestock and big game animals on which vegetation is dominated by grasses, grass-like plants, forbs, or shrubs.

RAPTOR: Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, and eagles.

REACH: A segment of stream.

REASONABLY FORESEEABLE DEVELOPMENT SCENARIO (RFD): The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

RECLAMATION: The process of converting disturbed land to its former use or other productive uses.

RECLAMATION PROJECT: A water development and irrigation project of the Bureau of Reclamation.

RECLAMATION WITHDRAWALS:

- **First Form:** A reclamation withdrawal of public lands that are, or may be, needed for building and maintaining a reclamation project.

- Second Form: A reclamation withdrawal of public lands susceptible to irrigation from a reclamation project.
- The distinction between the first and second forms of withdrawals has been eliminated, and all such withdrawals are called reclamation withdrawals.

RECORD OF DECISION: A document signed by a responsible official recording a decision that was preceded by the preparation of an EIS.

RECREATION AND PUBLIC PURPOSES ACT (R&PP), THE ACT OF JUNE 14, 1926, AS AMENDED (43 USC 869, 869-4): A federal statute that allows the disposal of public lands to any state, local, federal, or political instrumentality or nonprofit organization for any recreation or public purpose, at the discretion of the authorized officer.

RECREATION MANAGEMENT ZONES: Subunits within a special recreation management area (SRMA) managed for distinctly different recreation products. Recreation products are composed of recreation opportunities, the natural resource and community settings within which they occur, and the administrative and service environment created by all affecting recreation-tourism providers within which recreation participation occurs.

RECREATION NICHE: The place or position within the strategically targeted recreation-tourism market for each SRMA that is most suitable (i.e., capable of producing certain specific kinds of recreation opportunities) and appropriate (i.e., most responsive to identified visitor or resident customers), given available supply and current demand, for the production of specific recreation opportunities and the sustainable maintenance of accompanying natural resource or community setting character.

RECREATION OPPORTUNITIES: Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes.

RECREATION OPPORTUNITY SPECTRUM (ROS): A framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences are arranged along a continuum or spectrum divided into six classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban.

RECREATIONAL RIVER: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

RECREATION SETTINGS: The collective distinguishing attributes of landscapes that influence and sometimes actually determine what kinds of recreation opportunities are produced.

RECREATION SETTING CHARACTER CONDITIONS: The distinguishing recreational qualities of any landscape, objectively defined along a continuum, ranging from primitive to urban landscapes, expressed in terms of the nature of the component parts of its physical, social, and administrative attributes. These recreational qualities can be both classified and mapped. This classification and mapping process should be based on variation that either exists (for example, setting descriptions) or is desired (for example, setting prescriptions) among component parts of the various physical, social, and administrative attributes of any landscape. The recreation opportunity spectrum is one of the tools for doing this.

RECREATION-TOURISM MARKET: Recreation and tourism visitors and local residents who affect local governments and private sector businesses and the communities or other places where these customers originate (local, regional, national, or international). Based on analysis of supply and demand, land use plans strategically identify primary recreation-tourism markets for each SRMA—destination, community, or undeveloped.

REGIONAL ECONOMIC INFORMATION SYSTEM (REIS): This is an information system used by the Bureau of Economic Analysis, US Department of Commerce.

RELICT: A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed.

RELINQUISHMENT (GRAZING): When a permittee or lessee gives up all or part of his or her permitted use of animal unit months (AUMs) identified on the grazing permit or lease, as well as the grazing preference for a particular pasture or allotment.

RESEARCH NATURAL AREA: An area that illustrates or typifies for research or educational purposes, the important forest and range types in each field office, as well as other plant communities that have special or unique characteristics of scientific interest and importance.

RESERVATION: A "setting aside" or dedication of lands for the federal government for a specific public purpose. "Reserved" land is not necessarily withdrawn. A permanent withdrawal dedicated to a specific public purpose

RESERVE COMMON ALLOTMENT: A separate BLM-administered grazing unit (allotment or pasture that is reserved for nonrenewable grazing use by permittees/lessees or others participating in land restoration or recovery efforts that preclude use of all or part of the permitted use assigned to their base property.

RESERVES (MINERAL): Known mineral deposits that are recoverable under present conditions but are, as yet, undeveloped.

RESERVOIR (OIL AND GAS): A naturally occurring, underground container of oil and gas, usually formed by deformation of strata and changes in porosity.

RESOURCE ADVISORY COUNCIL (RAC): A council established by the Secretary of the Interior to provide advice or recommendations to the BLM.

RESOURCE MANAGEMENT PLAN (RMP): A land use plan as prescribed by the FLPMA which establishes, for a given area of land: land-use allocations, coordination guidelines for multiple use, objectives, and actions to be achieved.

REST ROTATION: Grazing rotation that rests pastures that have been grazed early the prior year or that have been identified as needing rest for resource reasons.

REVISION: The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

REVOCATION: The action that cancels a withdrawal but does not necessarily "open" the lands to application or entry.

RIGHT-OF-WAY (ROW): A permit or an easement which authorizes the use of public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, etc.; also, the lands covered by such an easement or permit.

RIGHT-OF-WAY (ROW) CORRIDOR: A parcel of land that has been identified by law, Secretarial order, through a land use plan, or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical, or compatible.

RIPARIAN AREA: A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral areas or washes that lack vegetation and are dependent on free water in the soil.

RIVER DESIGNATION: The process whereby rivers are added to the National Wild and Scenic Rivers System by an act of Congress or by administrative action of the Secretary of the Interior with regard to state-designated rivers under Section 2(a)(ii) of the Wild and Scenic Rivers Act.

ROAD: A linear route declared a road by the owner, managed for use by low clearance vehicles having four or more wheels, and maintained for regular and continuous use.

ROAD DENSITY: Number of miles of open road per square mile.

ROADLESS: Refers to the absence of roads which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

ROCK ART: Petroglyphs or pictographs.

ROTATION: Grazing rotation between pastures in the allotment for the permitted time.

ROUTES: Multiple roads, trails, and primitive roads; a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as “routes.”

RUNOFF: The water that flows on the land surface from an area in response to rainfall or snowmelt.

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SALABLE MINERALS: Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed of by sales or special permits to local governments.

SALMONID: Any fish of the Salmonidae family, including salmon and trout.

SCALE: Refers to the geographic area and data resolution under examination in an assessment or planning effort.

SCENIC BYWAYS: Highway routes that have roadsides or corridors of special aesthetic, cultural, or historical value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

SCENIC QUALITY: The degree of harmony, contrast and variety within a landscape.

SCENIC RIVER: A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

SCOPING: The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an EIS or land use planning document. It involves both internal and public viewpoints.

SEASON-OF-USE: The time during which livestock grazing is permitted on a given range area, as specified in the grazing permit or lease.

SEASONAL RESTRICTION: A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities, unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

SECTION 7 CONSULTATION: The requirement of Section 7 of the Endangered Species Act that all federal agencies consult with the FWS or the National Marine Fisheries Service if a proposed action might affect a federally listed species or its critical habitat.

SECTION 106 COMPLIANCE: The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the federal government be reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

SECURITY HABITAT: Refers to the protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with hunting or other human activities.

SEDIMENT: Soil, rock particles, and organic or other debris carried from one place to another by wind, water, or gravity.

SEDIMENTARY ROCK: Rock resulting from consolidation of loose sediment that has accumulated in layers.

SEDIMENTATION: The process or action of depositing sediment.

SEGREGATION: Any action such as a withdrawal or allowed application (exchange) that suspends the operation of the general public land laws; removing lands from the operation of part or all the public land mineral laws.

SENSITIVE SPECIES: Species designated by the State Director, usually in cooperation with the state agency responsible for managing the species and state natural heritage programs, as sensitive. They are those species that: (1) could become endangered in, or extirpated from, a state or within a significant portion of its distribution; (2) are under status review by the FWS and/or National Marine Fisheries Service; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listed, proposed, candidate, or state listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are state listed but which may be better conserved through application of BLM sensitive species status..

SERAL: A temporal and intermediate condition pertaining to the successional stages of biotic communities.

SETTING CHARACTER: The condition of any recreation system, objectively defined along a continuum ranging from primitive to urban in terms of variation of its component physical, social, and administrative attributes.

SHAFT: A vertical or inclined opening to an underground mine.

SHALLOW SOILS: Soils that are less than 20 inches to bedrock.

SHORT TERM: Effects lasting less than 5 years.

SHRUB: A low, woody plant, usually with several stems, that may provide food and/or cover for animals.

SIGNIFICANT: An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, either beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

SLASH: Forest residues such as branches, bark, tops, cull logs, broken or uprooted trees, and/or stumps that can be left on the ground or in piles after logging, vegetative or fuels treatments, or land use activities such as road construction.

SLOPE: The degree of deviation of a surface from the horizontal.

SOIL COMPACTION: A layer of dense soil caused by repeated impacts on or disturbances of the soil surface. Compaction becomes a problem when it begins to limit plant growth, water infiltration, or nutrient cycling processes.

SOIL PRODUCTIVITY: The capacity of a soil to produce a plant or sequence of plants under a system of management.

SOIL TEXTURE: The relative proportions of the three size groups of soil grains (sand, silt, and clay) in a mass of soil.

SOLITUDE: (1) the state of being alone or remote from others; isolation; (2) a lonely or secluded place.

SOURCE WATER PROTECTION PLAN: A management plan, usually developed by local communities, that addresses public water system concerns based on information contained within source water delineation and assessment reports.

SPECIAL RECREATION MANAGEMENT AREA (SRMA): A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities.

SPECIAL STATUS SPECIES: Includes proposed species, listed species, and candidate species under the Endangered Species Act, state-listed species, and BLM State Director-designated sensitive species.

SPECIES: A unit of classification of plants and animals consisting of the largest and most inclusive array of sexually reproducing and cross-fertilizing individuals which share a common gene pool.

SPECIES DIVERSITY: The number, different kinds of, and relative abundances of species present in a given area.

SPLIT SEASON: Removing livestock from the allotment and returning them later in the year within the permitted time.

SPOT TREATMENT: An application of an herbicide to a small, selected area as opposed to broadcast application.

STAND: A community of trees or other vegetation uniform in composition, constitution, spatial arrangement, or condition to be distinguishable from adjacent communities.

STAND COMPOSITION: The proportion of each tree species in a stand expressed as a percentage of all trees, basal area, or volume.

STANDARD: A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., land health standards); to be expressed as a desired outcome or goal.

STATE EXCHANGE: A land exchange between the federal government and a state.

STATE IMPLEMENTATION PLAN: A detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act.

STIPULATIONS: Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all federal leases; other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

STRATEGIC PLAN: A plan that establishes the overall direction for the BLM. This plan is guided by the requirements of the Government Performance and Results Act of 1993, covers a 5-year period, and is updated every 3 years. It is consistent with the FLPMA and other laws affecting the public lands.

STREAM REACH: A specified length of a stream or channel.

STRUCTURE (STREAM CHANNEL): Any object, usually large, in a stream channel that controls water movement.

STRUCTURE (FOREST VEGETATION): The horizontal and vertical distribution of plants in a stand, including height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and coarse, woody debris.

SUBSTRATE: The mineral or organic material that forms the bed of a stream; the base upon which an organism lives; the surface on which a plant or animal grows or is attached.

SUCCESION: The replacement in time of one plant community with another. The prior plant community (or successional stage) creates conditions that are favorable for the establishment of the next stage.

SUITABILITY (FOR WILD AND SCENIC RIVERS): Evaluation of eligible rivers for inclusion into the National Wild and Scenic River System by determining the best use of the river corridor and the best method to protect the outstandingly remarkable values within the river corridor.

SUSTAINABILITY: The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

SUSTAINED YIELD: Maintenance of an annual or regular periodic output of a renewable resource from public land consistent with the principles of multiple use.

-T-

TAILINGS: The waste matter from ore after the extraction of economically recoverable metals and minerals.

TAKE: As defined by the Endangered Species Act, “to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct.”

TERMS AND CONDITIONS: Measures contained in livestock grazing permits and leases which are determined by the authorized officer to be appropriate to achieve management and resource condition objectives for the public lands and other lands administered by the BLM, and to ensure conformance with the fundamentals of rangeland health and standards and guidelines for grazing administration.

TERRESTRIAL SPECIES: Ground-dwelling plants and animals.

THERMAL COVER: Vegetation or topography that prevents radiational heat loss, reduces wind chill during cold weather, and intercepts solar radiation during warm weather.

THREATENED SPECIES: Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the *Federal Register*.

TOOLS: Something that helps to accomplish the stated goal or action for a resource/resource use or program. Tools include: timing, duration of grazing, forage utilization, grazing rotation, deferment of grazing, stubble height, bank alteration, and structural features.

TOTAL MAXIMUM DAILY LOAD (TMDL): An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria.

TRADITIONAL CULTURAL PROPERTY: A property that derives significance from traditional values associated with it by a social or cultural group such as an Indian tribe or local community. A traditional cultural property may qualify for the National Register of Historic Places if it meets the criteria and criteria exceptions at 36 CFR 60.4 (see National Register Bulletin 38).

TRADITIONAL LIFEWAY VALUES: Values that are important for maintaining a group's traditional system of religious belief, cultural practice, or social interaction. A group's shared traditional lifeway values are abstract, nonmaterial, ascribed ideas that cannot be discovered except through discussions with members of the group. These values may or may not be closely associated with definite locations. Traditional lifeway values sometimes imbue cultural resources with significance. They can be identified through consultation and considered through public participation during planning and environmental review. The BLM does not manage people's values, beliefs, or social systems.

TRANSPORTATION LINEAR FEATURES: "Linear features" represents the broadest category of physical disturbance (planned and unplanned) on land administered by the BLM. Transportation related linear features include engineered roads and trails as well as user-defined, nonengineered roads and trails created as a result of the public use of Bureau land. Linear features may include roads and trails identified for closure or removal as well as those that make up the Bureau's defined transportation system.

TRANSPORTATION SYSTEM: The sum of the BLM's recognized inventory of linear features (roads, primitive roads, and trails) formally recognized, designated, and approved as part of the Bureau's transportation system.

TRAVEL MANAGEMENT AREAS: Polygons or delineated areas where a rational approach has been taken to classify areas open, closed, or limited, and have identified and/or designated a network of roads, trails, ways, and other routes that provide for public access and travel across the planning area. All designed travel routes within travel management areas should have a clearly identified need and purpose as well as clearly defined activity types, modes of travel, and seasons or timeframes for allowable access or other limitations.

TREATMENT AREA: The specific area of land where the actual management activity, such as timber harvest, prescribed burning, construction, or other activity would occur. One or more treatment areas can be included in a project area which usually includes adjacent and/or surrounding areas that are not treated, and multiple activities could occur within a single treatment area, concurrently or over time.

-U-

UNAUTHORIZED USE: Any occupancy or use of the public lands or the resources of the United States without authorization.

UNAVOIDABLE ADVERSE EFFECTS: Those that remain following the implementation of mitigation measures, and include effects for which there are no mitigation measures.

UNDERSTORY: Vegetation (e.g., trees or shrubs) growing under the canopy formed by taller trees.

UNDEVELOPED RECREATION-TOURISM MARKET: National, regional, or local recreation-tourism visitors, communities, or other constituents who value public lands for the distinctive kinds of dispersed recreation produced by the vast size and largely open, undeveloped character of their recreation settings. Major investments in facilities are excluded within SRMAs where the Bureau's strategy is to target demonstrated, undeveloped recreation-tourism market demand. Here, recreation management actions are geared toward meeting primary recreation-tourism market demand to sustain distinctive recreation setting characteristics; however, major investments in visitor services are authorized both to sustain those distinctive setting characteristics and to maintain visitor freedom to choose where to go and what to do—all in response to demonstrated demand for undeveloped recreation.

UNGULATES: Hoofed animals, including ruminants but also horses, tapirs, elephants, rhinoceroses, and swine.

UNLEASED ALLOTMENTS (GRAZING): Areas of land designated and managed for livestock grazing which are currently not leased or permitted by a qualified applicant.

UNRESERVED PUBLIC LANDS: Public lands not covered by a reservation or a withdrawal except by the federal orders of withdrawal.

UPLANDS: Lands at higher elevations than alluvial plains or low stream terraces; all lands outside the riparian-wetland and aquatic zones.

USE AUTHORIZATION: Approval of a proposed use for land or resources on the prescribed form or document designated for such use; a document showing permission to use land or the resources thereon; a formalized grant pursuant to a request to use land or resources.

USER DAY: Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands or related waters; synonymous with passenger day or participant day.

UTILIZATION (RANGELAND): The proportion of the current year's forage production that is consumed or destroyed by grazing animals. Utilization is usually expressed as a percentage.

-V-

VACANT AVAILABLE LANDS (GRAZING): Areas of land designated for livestock grazing which are not segregated into allotments. These lands may be formed into allotments if a qualified applicant applies for a lease or permit.

VACANT PUBLIC LANDS: Public lands that are unappropriated and unreserved and not within a withdrawal; lands that are not reserved except by the general orders of withdrawal.

VALID EXISTING RIGHTS: Locatable mineral development rights that existed when FLPMA was enacted on October 21, 1976. Some areas are segregated from entry and location under the Mining Law to protect certain values or allow certain uses. Mining claims that existed as of the effective date of the segregation may still be valid if they can meet the test of discovery of a valuable mineral required under the Mining Law. Determining the validity of mining claims located in segregated lands requires the BLM to conduct a validity examination and is called a “valid existing rights” determination.

VEGETATION COMMUNITY: An assemblage of plant populations in a common spatial arrangement.

VEGETATION MANIPULATION: Alteration of vegetation by using fire, plowing, cutting, powered mechanical, or other means.

VEGETATION TYPE: A plant community with distinguishable characteristics described by the dominant vegetation present.

VERY DEEP SOILS: Soils that are greater than 60 inches deep to bedrock.

VERY SHALLOW SOILS: Soils that are less than 10 inches to bedrock.

VIALE: Capable of sustaining a healthy, productive, and reproducing population over a long period of time.

VISIBILITY (AIR QUALITY): A measure of the ability to see and identify objects at different distances.

VISITOR USE: Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES: Define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. Categories assigned to public lands are based on scenic quality, sensitivity level, and distance zones. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape (from H-1601-1, BLM Land Use Planning Handbook). The four classes are described below:

- **Class I** provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.
- **Class II** areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- **Class III** includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- **Class IV** applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

-W-

WAIVER (OIL AND GAS): A permanent exemption to a lease stipulation.

WASTE ROCK: Barren rock at a mine or material that is too low in grade to be of economic value.

WATER QUALITY: The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

WATER QUALITY RESTORATION PLANS: A comprehensive plan developed in conjunction with Montana Department of Environmental Quality, local watershed groups, and numerous agencies and entities to address and establish water quality goals; total maximum daily loads, restoration strategies, and monitoring.

WATER TABLE: The surface in a groundwater body where the water pressure is atmospheric. It is the level at which water stands in a well that penetrates the water body just far enough to hold standing water.

WATERSHED: A geomorphic area of land and water within the confines of a drainage divide. The total area above a given point on a stream that contributes flow at that point.

WATERSHED APPROACH: A framework to guide watershed management that: (1) uses watershed assessments to determine existing and reference conditions; (2) incorporates assessment results into resource management planning; and (3) fosters collaboration with all landowners in the watershed. The framework considers both ground and surface water flow within a hydrologically defined geographical area.

WATERSHED ASSESSMENT: An analysis and interpretation of the physical and landscape characteristics of a watershed using scientific principles to describe watershed conditions as they affect water quality and aquatic resources.

WEED MANAGEMENT AREA (WMA): These are distinguishable zones based on similar geography, weed problems, climate, or human-use patterns with agreements between landowners to cooperatively manage noxious weeds.

WETLAND VEGETATION: The outer extent of the obligate and facultative wetland species that grows on land that is inundated or saturated by surface water or groundwater.

WETLANDS: Areas that are inundated or saturated by surface or ground water often and long enough to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

WILD RIVER: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

WILD, SCENIC, OR RECREATIONAL RIVER: The three classes of what is traditionally referred to as a “wild and scenic river.” Designated river segments are classified as wild, scenic, and/or recreational, but the segments cannot overlap.

WILD AND SCENIC STUDY RIVER: Rivers identified in Section 5 of the Wild and Scenic Rivers Act for study as potential additions to the National Wild and Scenic Rivers System. The rivers shall be studied under the provisions of Section 4 of the Wild and Scenic Rivers Act.

WILDCAT, OR EXPLORATION, WELL: A well drilled in the area where there is no oil or gas production.

WILDERNESS: A Congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres

or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

WILDERNESS CHARACTERISTICS: Key characteristics of a wilderness listed in Section 2(c) of the Wilderness Act of 1964 and used by the BLM in its wilderness inventory. These characteristics include size, naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive and unconfined type of recreation, and special features.

WILDERNESS STUDY AREA (WSA): A designation made through the land use planning process of a roadless area found to have wilderness characteristics as described in Section 2(c) of the Wilderness Act of 1964.

WILDFIRE: An unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

WILDLAND FIRE: Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

WILDLAND FIRE SITUATION ANALYSIS: A decisionmaking process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

WILDLAND URBAN INTERFACE (WUI): The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

WILDLIFE CORRIDOR: Landscape elements that connect similar patches of habitat through an area with different characteristics. Wildlife corridors are also segments of land which create a link between critical habitats. For example, streamside vegetation may create a corridor of willows and hardwoods between meadows or through a forest. These linkage zones are where species migrate and intermingle, ensuring genetic interchange and, consequently, long-term survival.

WINTER RANGE: Range that is grazed during winter.

WITHDRAWAL: Removal or withholding of public lands by statute or secretarial order from the operation of some or all of the public land laws.

WITHDRAWAL MODIFICATION: To make a change to an existing, indefinite withdrawal.

WITHDRAWAL REVOCATION: The cancellation of a withdrawal.

WOODLAND: A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves. All western juniper or limber pine is classified as woodlands since juniper and limber pine are classified as noncommercial species.

CHAPTER 10

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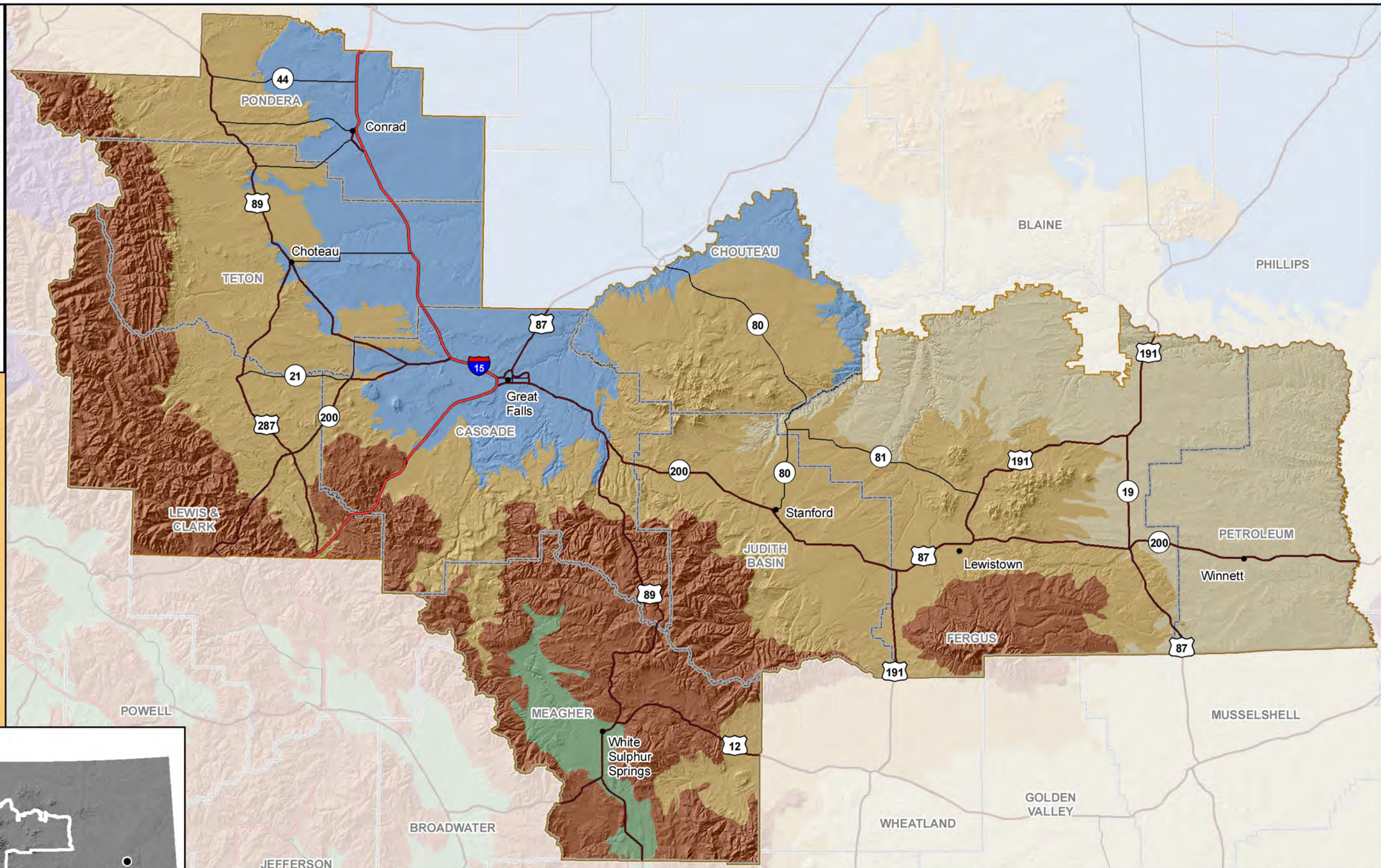
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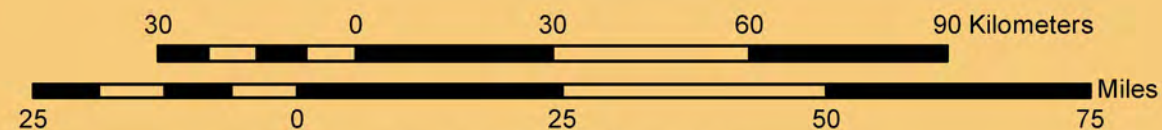
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Legend

- City
 - Interstate
 - Principal Highway
 - Other Highway
 - County
- Major Land Resource Area**
- Brown Glaciated Plain
 - Central Rocky Mountains
 - Northern Rocky Mountain Foothills
 - Northern Rocky Mountain Valleys
 - Northern Rolling High Plains, Northern Part



Map 1: Major Land Resource Areas



Projection: BLM Montana Dakotas Albers
Datum: NAD 1983

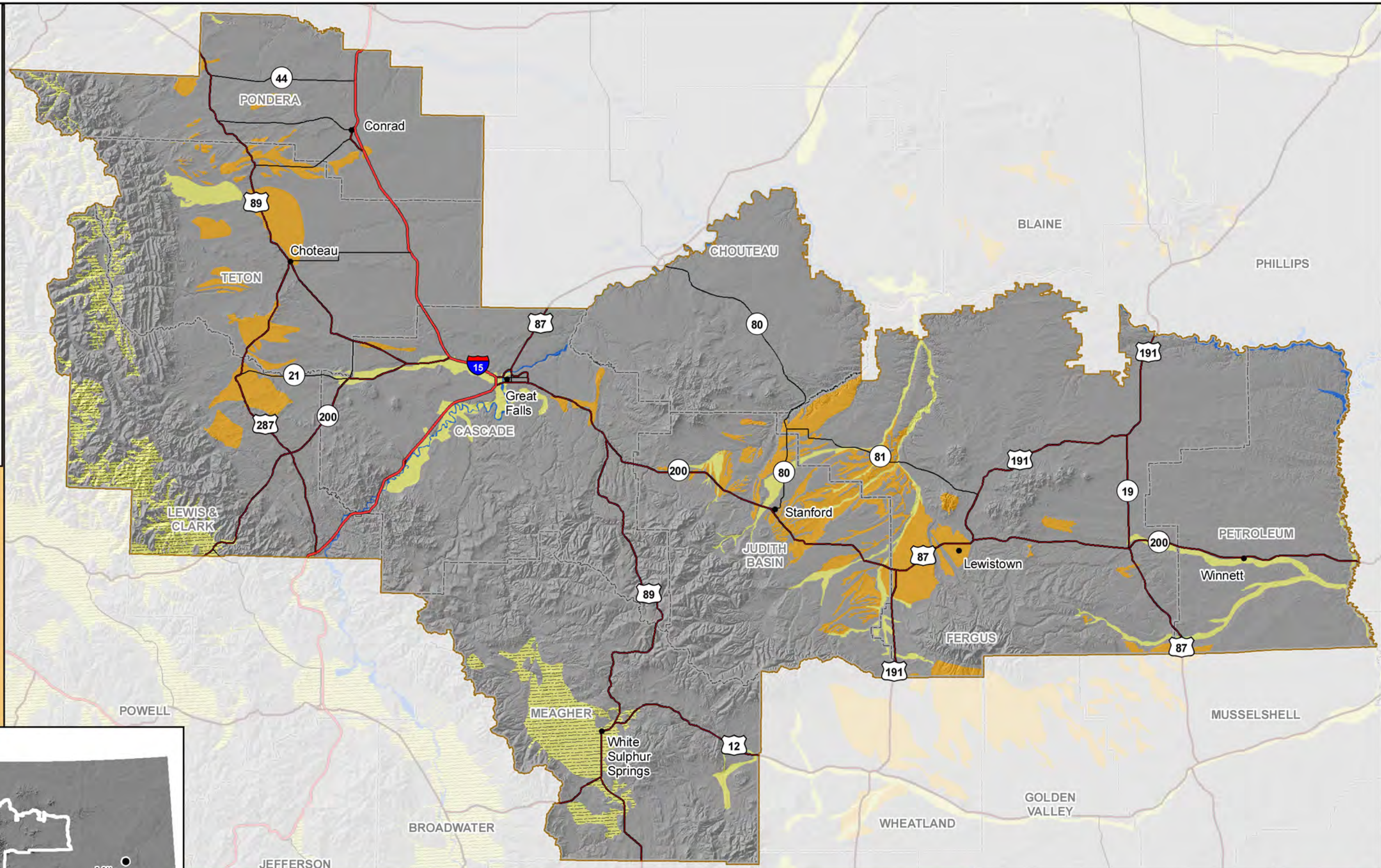
Lewistown Field Office Planning Area
Analysis of Management Situation
Bureau of Land Management - MT/DKs

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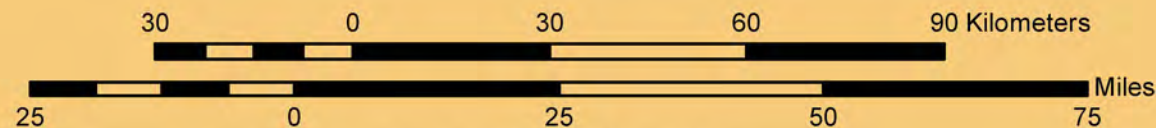


Legend

- City
- Limited Access Highway
- Principal Highway
- Other Highway
- County
- Surficial Aquifer**
 - None
 - Quaternary alluvium
 - Quaternary and Tertiary sands and gravels
 - Quaternary and Tertiary sediments, undifferentiate
 - Water



Map 2: Surficial Acquifers

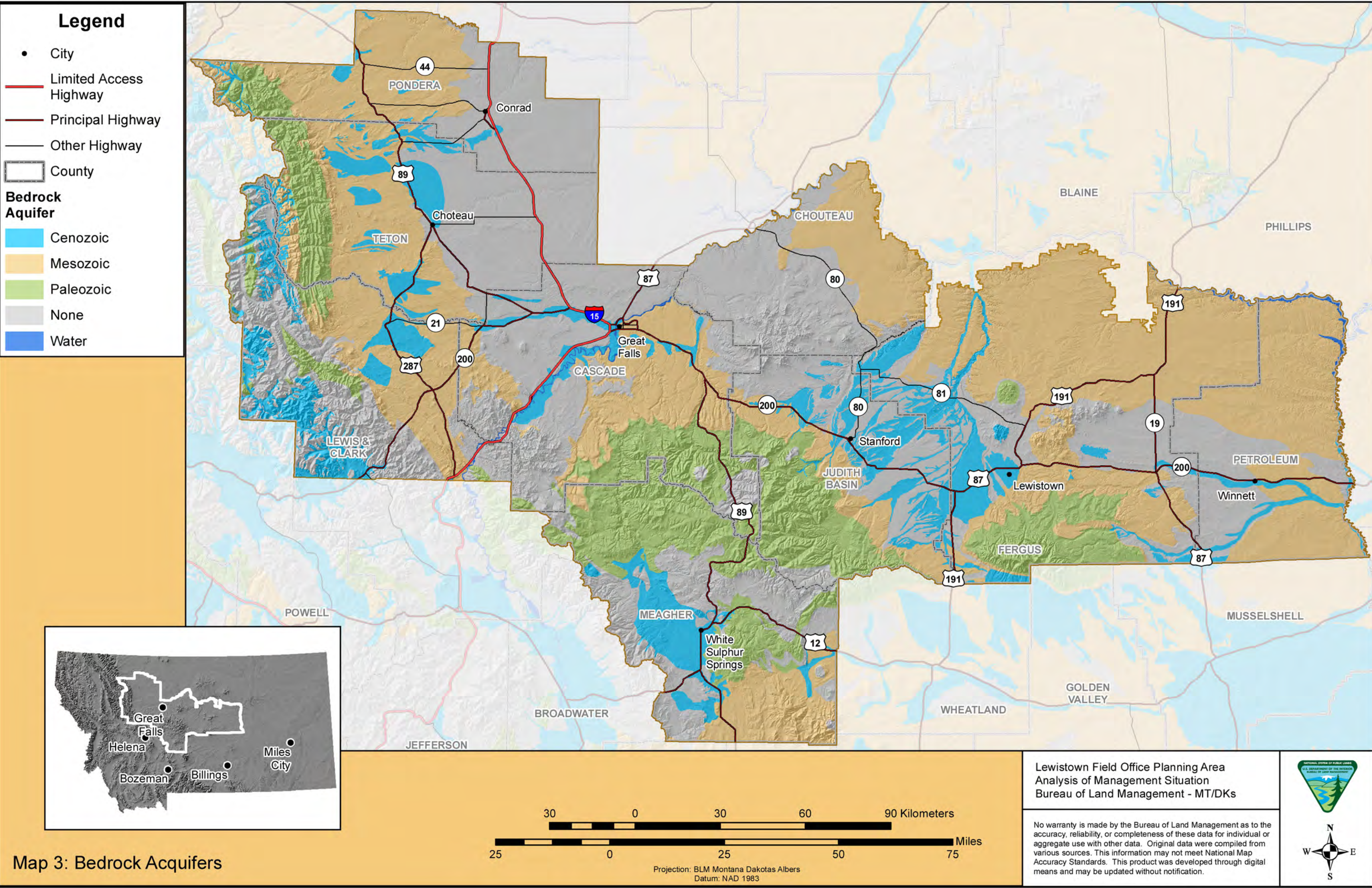


Projection: BLM Montana Dakotas Albers
Datum: NAD 1983

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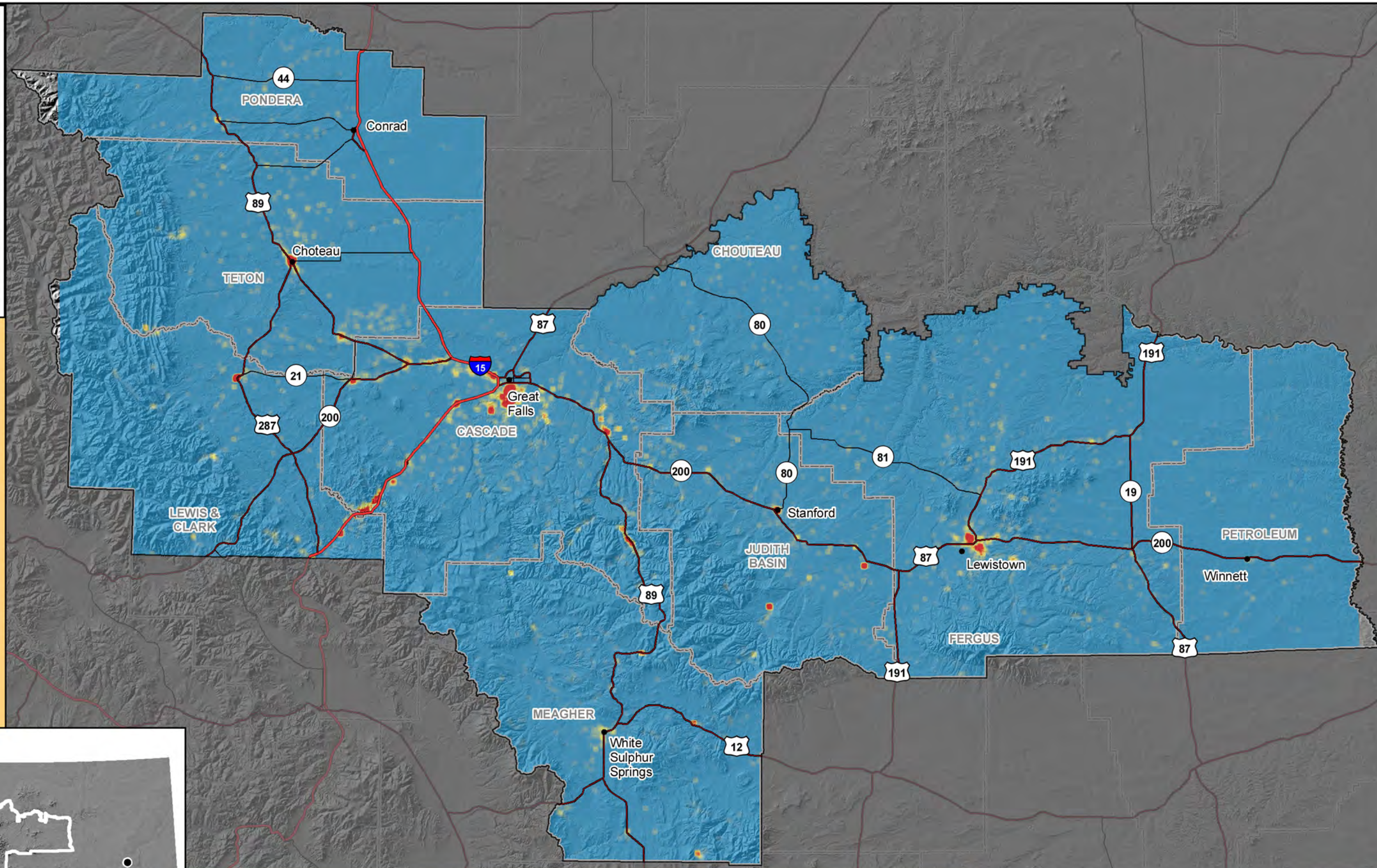
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Legend

- City
- Limited Access Highway
- Principal Highway
- Other Highway
- County
- Well Points of Diversion
 - Highest Density
 - Lowest Density



Map 4: Groundwater Well Density

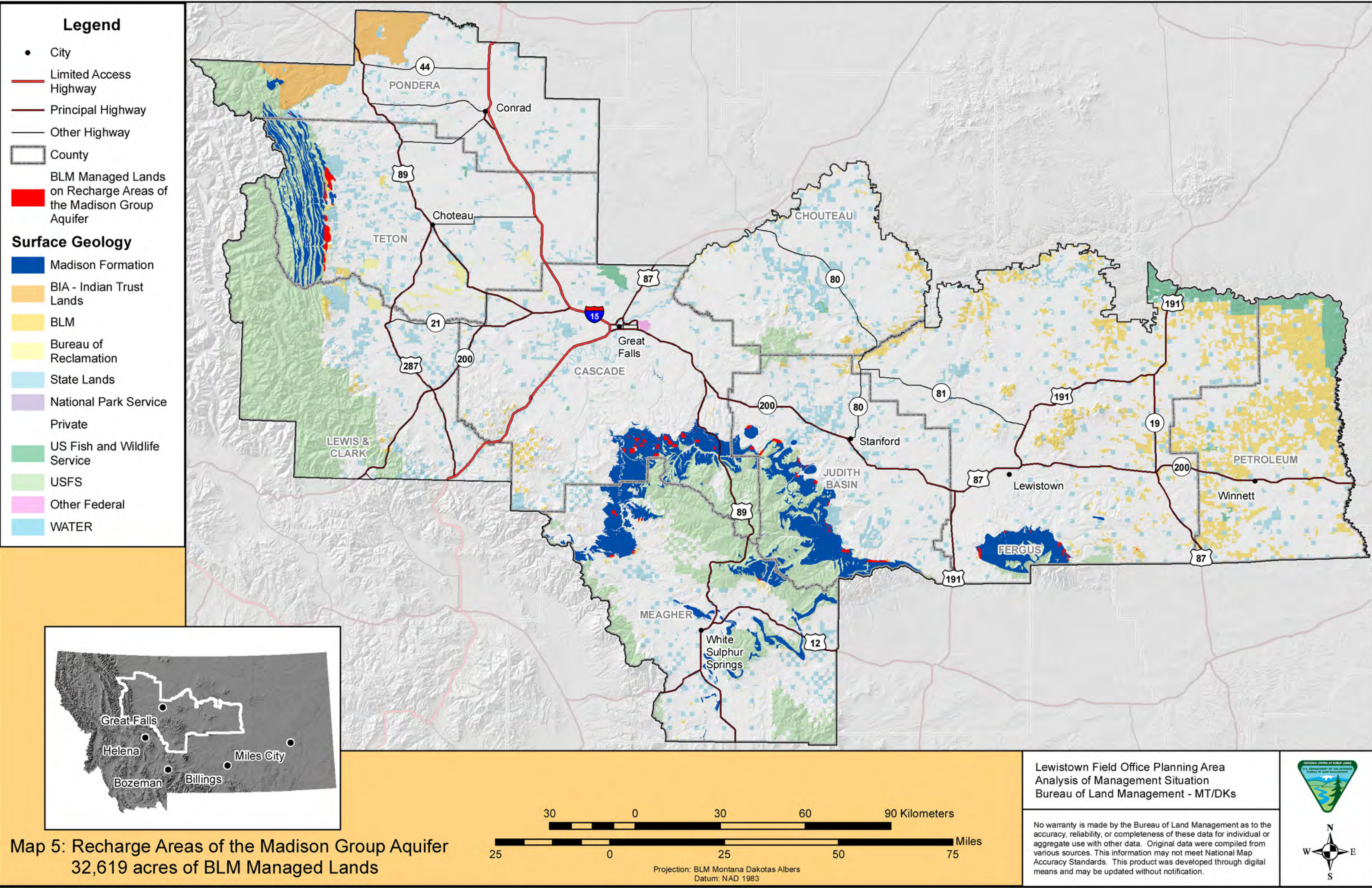


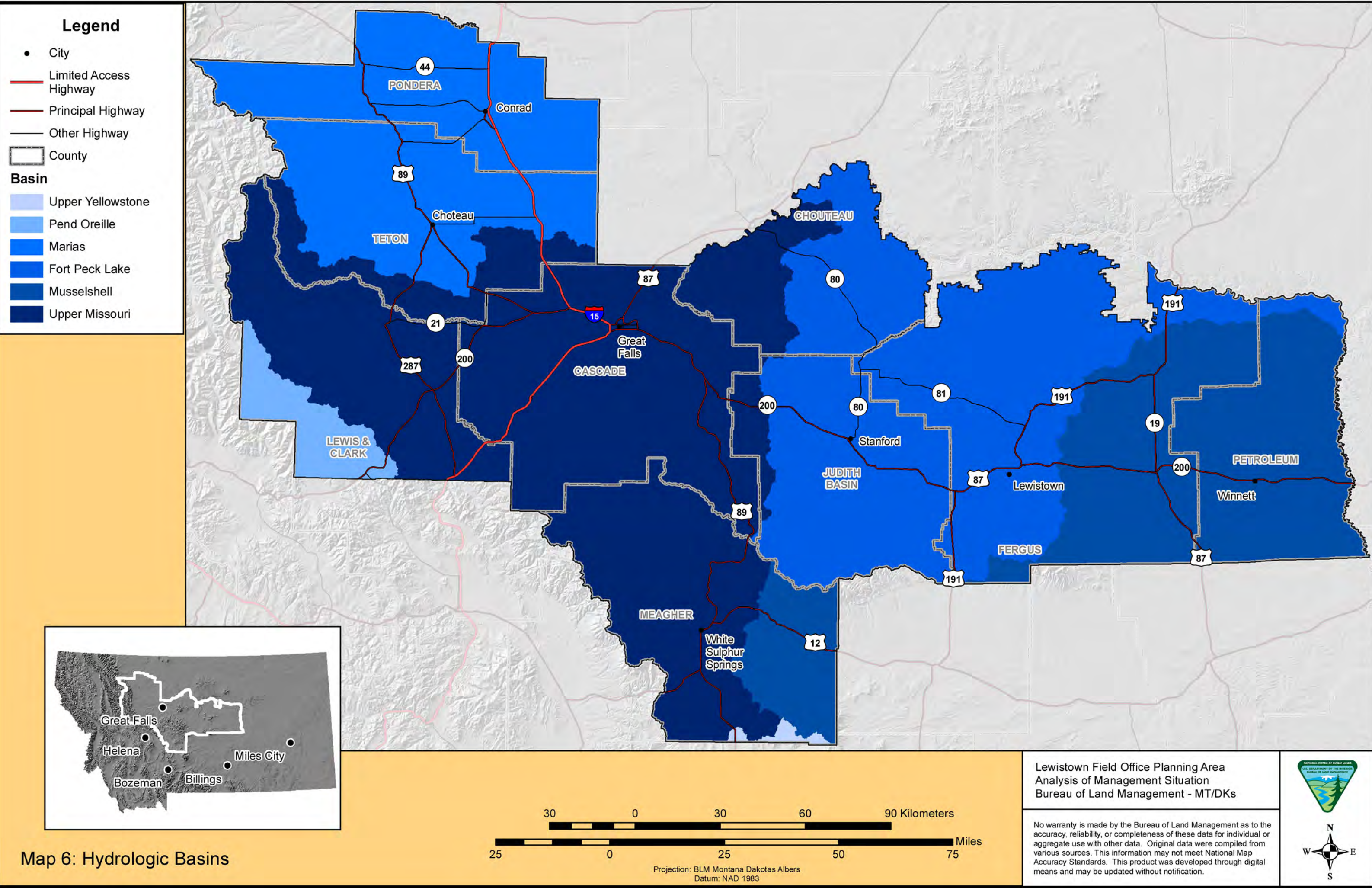
Projection: BLM Montana Dakotas Albers
Datum: NAD 1983

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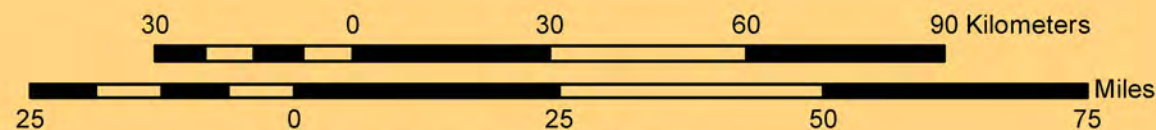
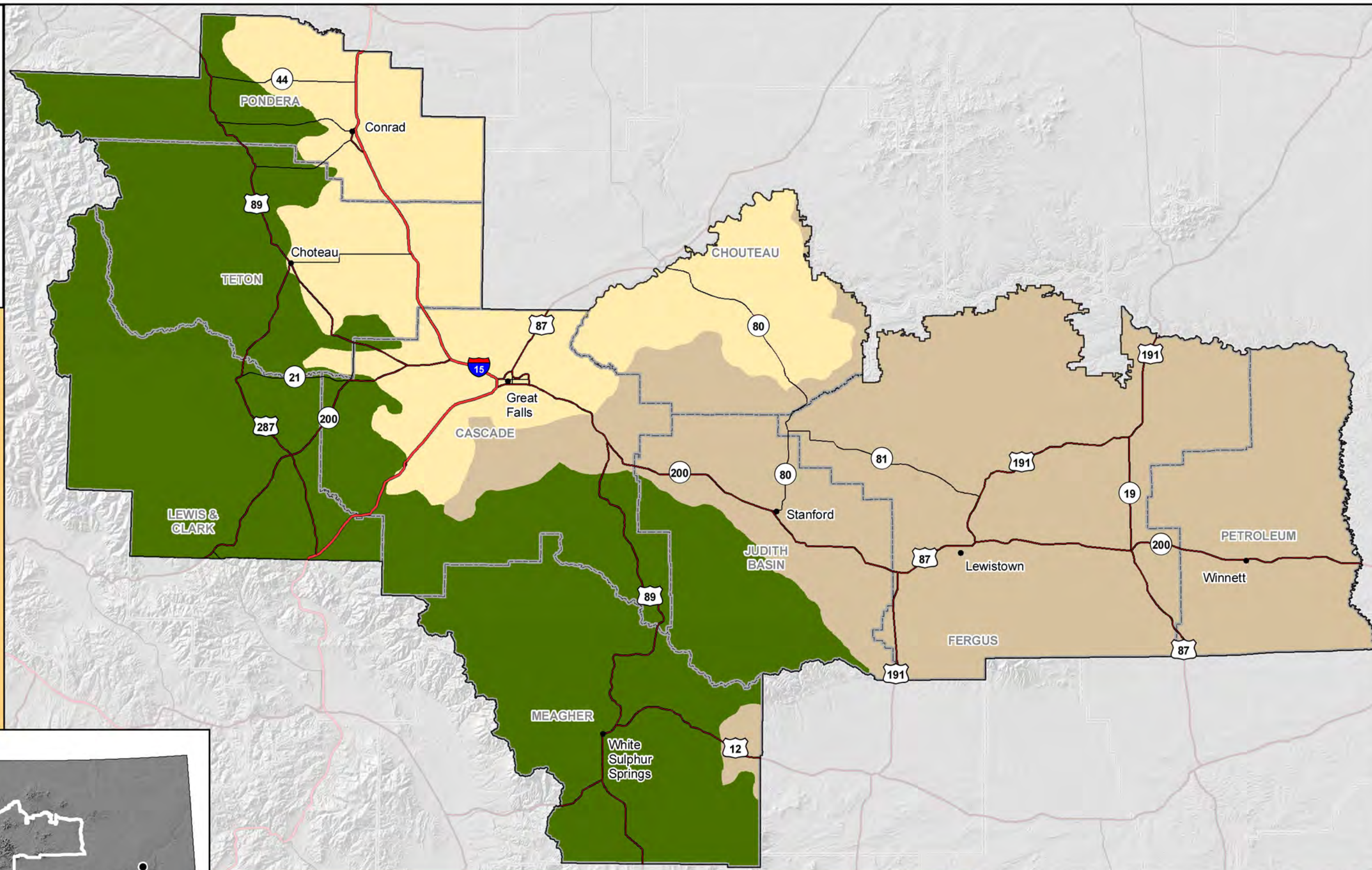






Legend

- City
- Limited Access Highway
- Principal Highway
- Other Highway
- County
- Bird Conservation Region**
 - Badlands and Prairies
 - Northern Rockies
 - Prairie Potholes



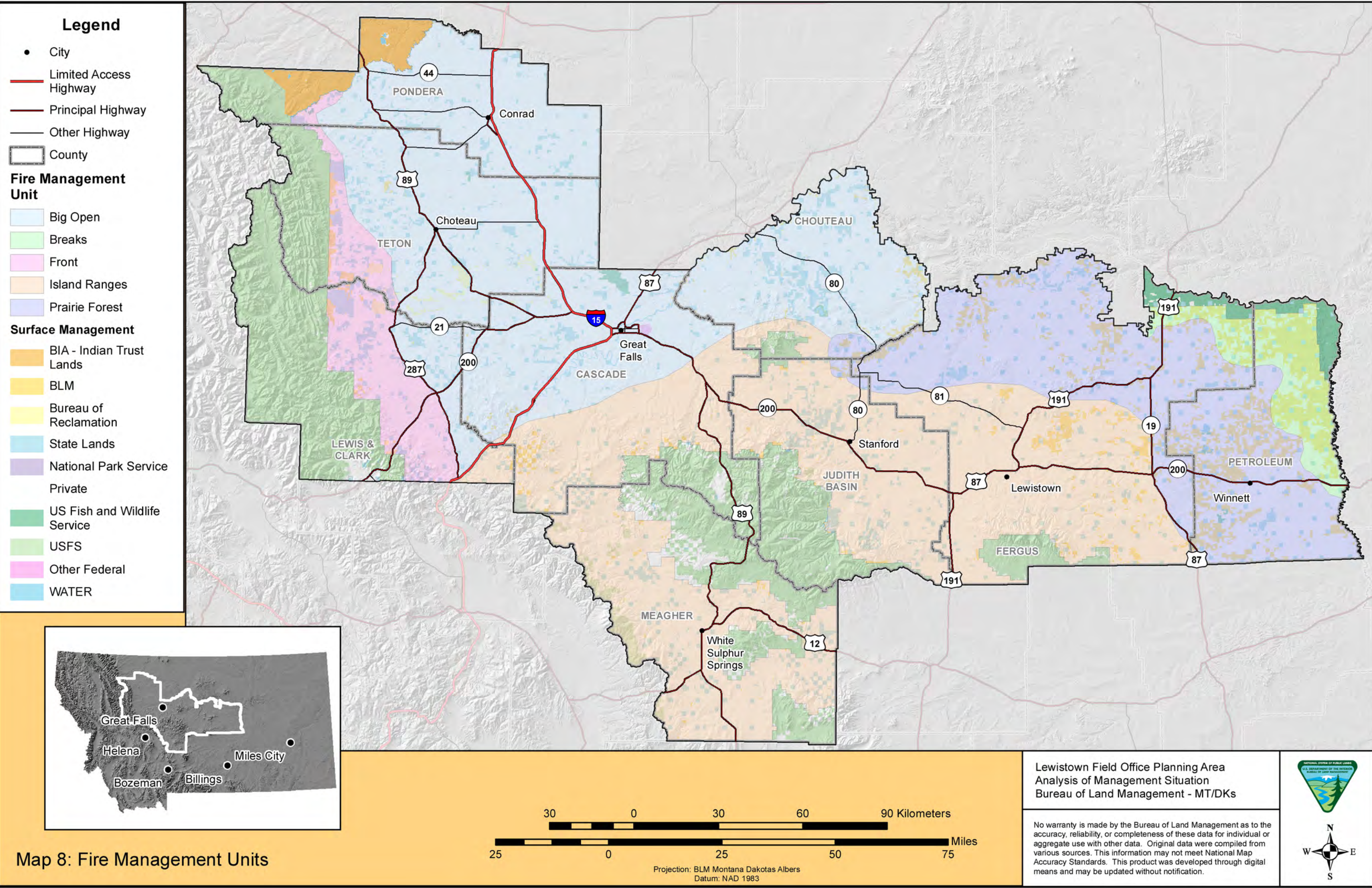
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Datum: NAD 1983

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Analysis of Management Situation
Bureau of Land Management - MT/DKs

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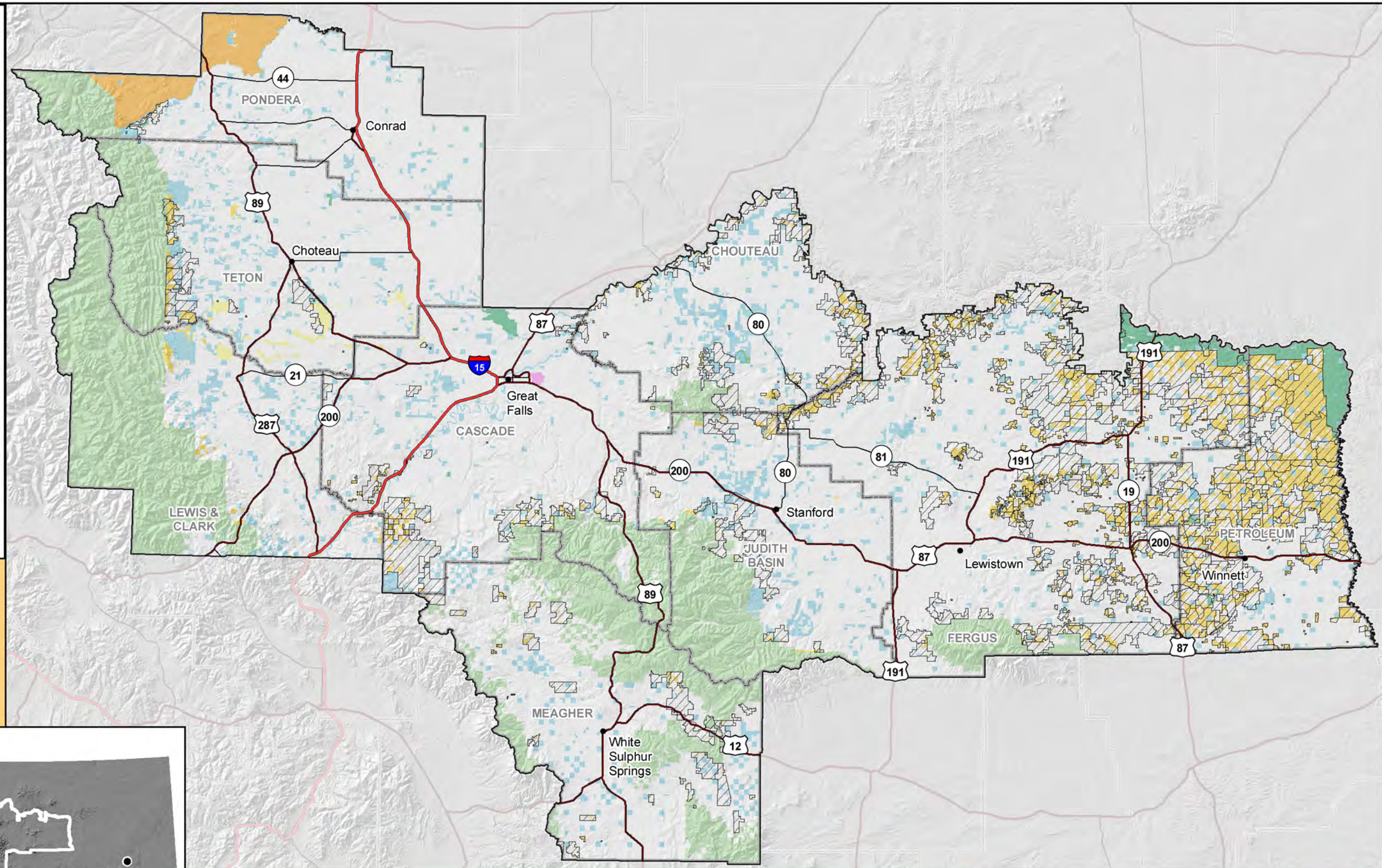


Map 7: Bird Conservation Regions

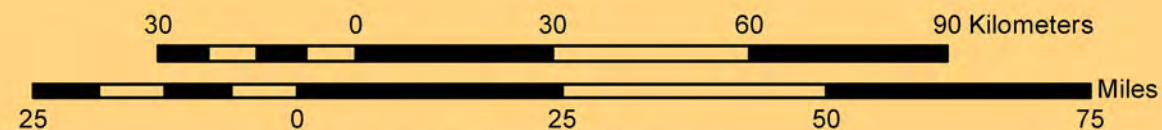


Legend

- City
 - Limited Access Highway
 - Principal Highway
 - Other Highway
 - Grazing Allotments
 - County
- Surface Management**
- BIA - Indian Trust Lands
 - BLM
 - Bureau of Reclamation
 - State Lands
 - National Park Service
 - Private
 - US Fish and Wildlife Service
 - USFS
 - Other Federal
 - WATER



Map 9: Grazing Allotments

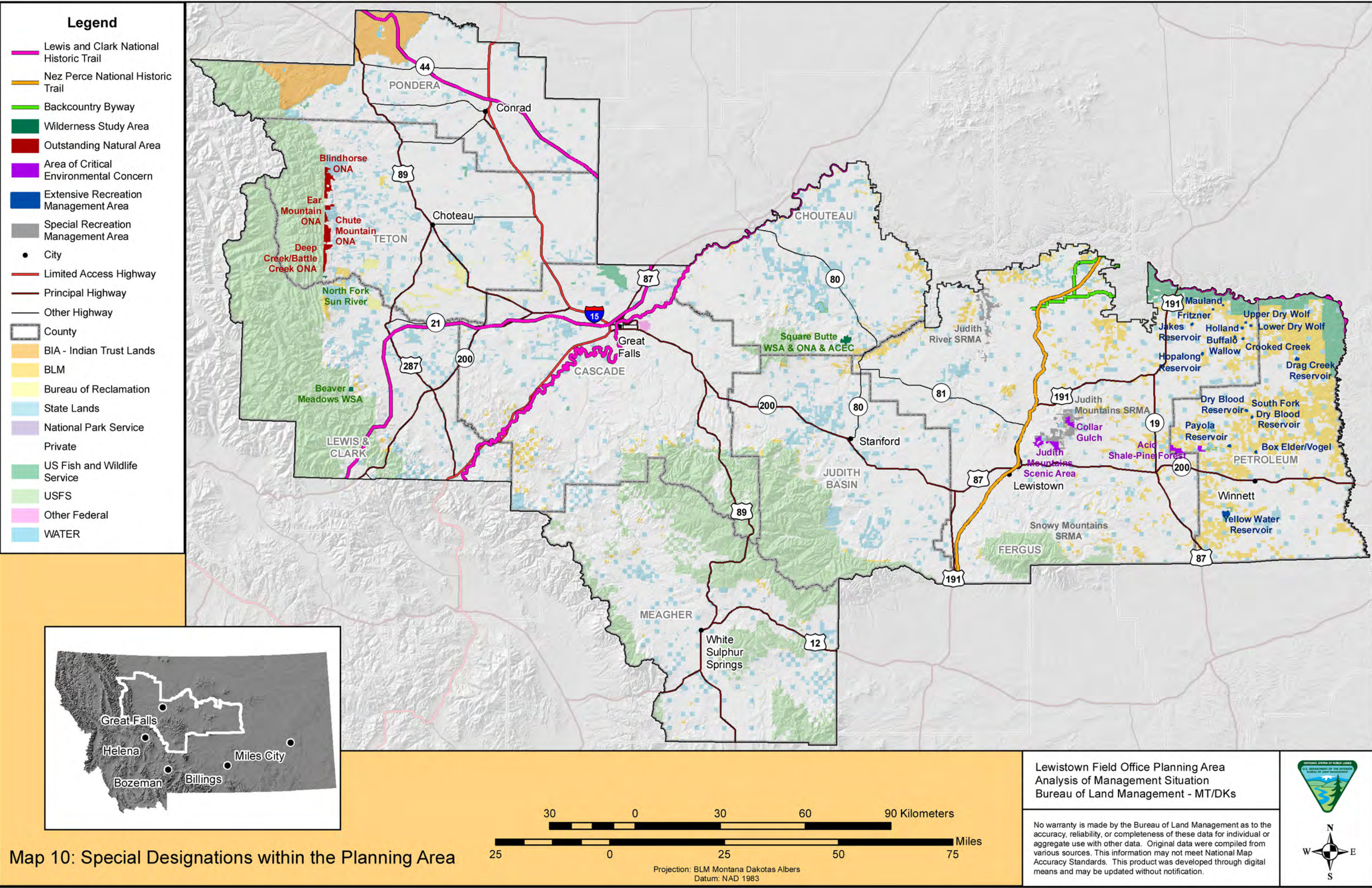


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Datum: NAD 1983

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Analysis of Management Situation
Bureau of Land Management - MT/DKs

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Map 10: Special Designations within the Planning Area

