From:	Schubert, Alex
To:	Donna ODonnell
Subject:	Fwd: Bighorn Basin RMP BA -- Formal Consultation
Date:	Friday, March 27, 2015 2:49:44 PM
Attachments:	BB RMP_Final Biological Assessment_2015_0304.pdf BB RMP_Final BA USFWS Comment Table_2015_0304.docx

---

Hi Donna,
Here is the email with the attachments.
Thanks.
Alex
---------- Forwarded message ----------
From: **Elliott, Holly** <helliott@blm.gov>
Date: Thu, Mar 5, 2015 at 11:30 AM
Subject: Bighorn Basin RMP BA -- Formal Consultation
To: Pamela Murdock <pmurdock@blm.gov>, Alex Schubert <alex_schubert@fws.gov>, Christopher Keefe <ckeefe@blm.gov>
Cc: Rebecca Good <rgood@blm.gov>, Steven Dondero <sdondero@blm.gov>, Delissa Minnick <dminnick@blm.gov>

Good Morning Alex --

Please find attached the BA for the Bighorn Basin RMP revision project. As directed by the BLM Wyoming State Office I am submitting this to initiate formal consultation on our Final RMP/EIS. If there are any comments you can put them in the attached table and send back to me. I will forward the official memo ASAP.

--
Holly Elliott
P&EC, WFO
307-347-5193

--
Alex L. S. Schubert
Fish and Wildlife Biologist
Cheyenne Field Office
U.S. Fish and Wildlife Service
307-772-2374 ext. 238
><(((((‘>

Final Biological Assessment
for the
Bighorn Basin Resource Management Plan
Revision Project

U.S. Department of the Interior
Bureau of Land Management, Wyoming

Cody Field Office
Worland Field Office

March 2015

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1. Proposed Resource Management Plan 1-3
1.1.1. Resource Uses and Support 1-3
1.1.2. Special Designations 1-4
1.1.3. Physical, Biological, and Heritage Resources 1-4
2.0 CONSULTATION AND BIOLOGICAL ASSESSMENT OBJECTIVES 2-1
3.0 OVERVIEW OF THE PLANNING AREA 3-1
3.1. Big Horn County 3-2
3.2. Hot Springs County 3-2
3.3. Park County 3-3
3.4. Washakie County 3-3
4.0 CURRENT STATUS AND HABITAT USE OF SPECIAL STATUS SPECIES 4-1
4.1. Black-footed Ferret 4-2
4.1.1. Status 4-2
4.1.2. Life History 4-2
4.1.3. Habitat Requirements 4-3
4.1.4. Regional and Local Distribution 4-3
4.1.5. Threats 4-4
4.2. Canada Lynx 4-5
4.2.1. Status 4-5
4.2.2. Life History 4-6
4.2.3. Habitat Requirements 4-6
4.2.4. Regional and Local Distribution 4-7
4.2.5. Threats 4-8
4.3. Gray Wolf 4-9
4.3.1. Status 4-9
4.3.2. Life History 4-11
4.3.3. Habitat Requirements 4-11
4.3.4. Regional and Local Distribution 4-12
4.3.5. Threats 4-13
4.4. Grizzly Bear 4-14
4.4.1. Status 4-14
4.4.2. Life History 4-14
4.4.3. Habitat Requirements 4-15
4.4.4. Regional and Local Distribution 4-16
4.4.5. Threats 4-17
4.5. North American Wolverine 4-17
4.5.1. Status 4-17
4.5.2. Life History 4-18
4.5.3. Habitat Requirements 4-18
4.5.4. Regional and Local Distribution 4-19
4.5.5. Threats 4-19
4.6. Ute Ladies'-tresses 4-20
4.6.1. Status 4-20

4.6.2. Life History 4-20
4.6.3. Habitat Requirements 4-20
4.6.4. Regional and Local Distribution 4-21
4.6.5. Threats 4-21

5.0 METHODS AND CONTEXT OF THE ANALYSIS 5-1

5.1. Activity Description 5-1
5.2. Effects Analysis 5-1
5.3. Effects Determinations 5-1
5.4. Coordination and Conservation Measures 5-3
5.5. Conservation Measures Common to All Species 5-4

6.0 ANALYSIS OF PROPOSED MANAGEMENT ACTIONS AND EFFECTS 6-1

6.1. Air Quality 6-1
6.1.1. Proposed Management Actions for Air Quality under the Bighorn Basin Proposed RMP 6-2
6.1.2. BLM-Committed Conservation Measures 6-2
6.1.3. Best Management Practices 6-2
6.1.4. Impact Analysis and Effects Determination 6-3
6.1.5. Cumulative Effects 6-4
6.2. Soil 6-4
6.2.1. Proposed Management Actions for Soil under the Bighorn Basin Proposed RMP 6-5
6.2.2. BLM-Committed Conservation Measures 6-5
6.2.3. Best Management Practices 6-6
6.2.4. Impact Analysis and Effects Determination 6-6
6.3. Water 6-7
6.3.1. Proposed Management Actions for Water under the Bighorn Basin Proposed RMP 6-8
6.3.2. BLM-Committed Conservation Measures 6-9
6.3.3. Best Management Practices 6-10
6.3.4. Impact Analysis and Effects Determination 6-10
6.4. Cave and Karst Resources 6-11
6.4.1. Proposed Management Actions for Cave and Karst Resources under the Bighorn Basin Proposed RMP 6-12
6.4.2. BLM-Committed Conservation Measures 6-12
6.4.3. Best Management Practices 6-12
6.4.4. Impact Analysis and Effects Determination 6-12
6.5. Locatable Minerals 6-13
6.5.1. Proposed Management Actions for Locatable Minerals under the Bighorn Basin Proposed RMP 6-14
6.5.2. BLM-Committed Conservation Measures 6-14
6.5.3. Best Management Practices 6-15
6.5.4. Impact Analysis and Effects Determination 6-15
6.6. Leasable Minerals – Coal 6-16
6.6.1. Proposed Management Actions for Leasable Coal under the Bighorn Basin Proposed RMP 6-17
6.6.2. BLM-Committed Conservation Measures 6-17
6.6.3. Best Management Practices 6-18

6.6.4. Impact Analysis and Effects Determination....6-18
6.7. Leasable Minerals – Oil Shale....6-19
6.7.1. Proposed Management Actions for Leasable Oil Shale under the Bighorn Basin Proposed RMP....6-19
6.7.2. BLM-Committed Conservation Measures....6-19
6.7.3. Best Management Practices....6-19
6.7.4. Impact Analysis and Effects Determination....6-19
6.8. Leasable Minerals – Geothermal....6-20
6.8.1. Proposed Management Actions for Leasable Geothermal under the Bighorn Basin Proposed RMP....6-21
6.8.2. BLM-Committed Conservation Measures....6-21
6.8.3. Best Management Practices....6-21
6.8.4. Impact Analysis and Effects Determination....6-21
6.9. Leasable Minerals – Oil and Gas....6-22
6.9.1. Proposed Management Actions for Leasable Oil and Gas under the Bighorn Basin Proposed RMP....6-23
6.9.2. BLM-Committed Conservation Measures....6-23
6.9.3. Best Management Practices....6-24
6.9.4. Impact Analysis and Effects Determination....6-25
6.10. Leasable Minerals – Other Solid Leasables....6-26
6.10.1. Proposed Management Actions for Other Solid Leasable Resources under the Bighorn Basin Proposed RMP....6-27
6.10.2. BLM-Committed Conservation Measures....6-27
6.10.3. Best Management Practices....6-27
6.10.4. Impact Analysis and Effects Determination....6-27
6.11. Salable Minerals....6-27
6.11.1. Proposed Management Actions for Salable Minerals under the Bighorn Basin Proposed RMP....6-28
6.11.2. BLM-Committed Conservation Measures....6-28
6.11.3. Best Management Practices....6-29
6.11.4. Impact Analysis and Effects Determination....6-29
6.12. Fire and Fuels Management – Wildfires (Unplanned Ignitions)....6-30
6.12.1. Proposed Management Actions for Wildfires under the Bighorn Basin Proposed RMP....6-31
6.12.2. BLM-Committed Conservation Measures....6-31
6.12.3. Best Management Practices....6-32
6.12.4. Impact Analysis and Effects Determination....6-32
6.13. Fire and Fuels Management – Prescribed Fires (Planned Ignitions)....6-34
6.13.1. Proposed Management Actions for Prescribed Fires under the Bighorn Basin Proposed RMP....6-34
6.13.2. BLM-Committed Conservation Measures....6-34
6.13.3. Best Management Practices....6-34
6.13.4. Impact Analysis and Effects Determination....6-35
6.14. Fire and Fuels Management – Stabilization and Rehabilitation....6-36
6.14.1. Proposed Management Actions for Stabilization and Rehabilitation under the Bighorn Basin Proposed RMP....6-36
6.14.2. BLM-Committed Conservation Measures....6-36
6.14.3. Best Management Practices....6-37

6.14.4. Impact Analysis and Effects Determination....6-37
6.15. Forests, Woodlands, and Forest Products....6-39
6.15.1. Proposed Management Actions for Forests, Woodlands, and Forest Products under the Bighorn Basin Proposed RMP....6-40
6.15.2. BLM-Committed Conservation Measures....6-40
6.15.3. Best Management Practices....6-41
6.15.4. Impact Analysis and Effects Determination....6-41
6.16. Grassland and Shrubland Communities....6-43
6.16.1. Proposed Management Actions for Grassland and Shrubland Communities under the Bighorn Basin Proposed RMP....6-43
6.16.2. BLM-Committed Conservation Measures....6-44
6.16.3. Best Management Practices....6-44
6.16.4. Impact Analysis and Effects Determination....6-44
6.17. Riparian/Wetland Resources....6-45
6.17.1. Proposed Management Actions for Riparian/Wetland Resources under the Bighorn Basin Proposed RMP....6-46
6.17.2. BLM-Committed Conservation Measures....6-46
6.17.3. Best Management Practices....6-47
6.17.4. Impact Analysis and Effects Determination....6-47
6.18. Invasive Species and Pest Management....6-48
6.18.1. Proposed Management Actions for Invasive Species and Pest Management under the Bighorn Basin Proposed RMP....6-49
6.18.2. BLM-Committed Conservation Measures....6-50
6.18.3. Best Management Practices....6-50
6.18.4. Impact Analysis and Effects Determination....6-51
6.19. Fish and Wildlife Resources....6-52
6.19.1. Proposed Management Actions for Fish and Wildlife Resources under the Bighorn Basin Proposed RMP....6-54
6.19.2. BLM-Committed Conservation Measures....6-56
6.19.3. Best Management Practices....6-56
6.19.4. Impact Analysis and Effects Determination....6-56
6.20. Special Status Species – Plants....6-58
6.20.1. Proposed Management Actions for Special Status Species Plants under the Bighorn Basin Proposed RMP....6-58
6.20.2. BLM-Committed Conservation Measures....6-59
6.20.3. Best Management Practices....6-59
6.20.4. Impact Analysis and Effects Determination....6-59
6.21. Special Status Species – Fish and Wildlife....6-60
6.21.1. Proposed Management Actions for Special Status Fish and Wildlife Species under the Bighorn Basin Proposed RMP....6-61
6.21.2. BLM-Committed Conservation Measures....6-62
6.21.3. Best Management Practices....6-62
6.21.4. Impact Analysis and Effects Determination....6-63
6.22. Wild Horses....6-64
6.22.1. Proposed Management Actions for Wild Horses under the Bighorn Basin Proposed RMP....6-64
6.22.2. BLM-Committed Conservation Measures....6-64
6.22.3. Best Management Practices....6-65

6.22.4. Impact Analysis and Effects Determination....6-65
6.23. Cultural Resources....6-66
6.23.1. Proposed Management Actions for Cultural Resources under the Bighorn Basin Proposed RMP....6-67
6.23.2. BLM-Committed Conservation Measures....6-67
6.23.3. Best Management Practices....6-67
6.23.4. Impact Analysis and Effects Determination....6-67
6.24. Paleontological Resources....6-69
6.24.1. Proposed Management Actions for Paleontological Resources under the Bighorn Basin Proposed RMP....6-70
6.24.2. BLM-Committed Conservation Measures....6-70
6.24.3. Best Management Practices....6-70
6.24.4. Impact Analysis and Effects Determination....6-70
6.25. Visual Resource Management....6-71
6.25.1. Proposed Management Actions for Visual Resource Management under the Bighorn Basin Proposed RMP....6-72
6.25.2. BLM-Committed Conservation Measures....6-72
6.25.3. Best Management Practices....6-72
6.25.4. Impact Analysis and Effects Determination....6-73
6.26. Lands and Realty....6-73
6.26.1. Proposed Management Actions for Lands and Realty under the Bighorn Basin Proposed RMP....6-74
6.26.2. BLM-Committed Conservation Measures....6-74
6.26.3. Best Management Practices....6-75
6.26.4. Impact Analysis and Effects Determination....6-75
6.27. Renewable Energy....6-76
6.27.1. Proposed Actions for Renewable Energy under the Bighorn Basin Proposed RMP....6-77
6.27.2. BLM-Committed Conservation Measures....6-78
6.27.3. Best Management Practices....6-78
6.27.4. Impact Analysis and Effects Determination....6-78
6.28. Rights-of-Way and Corridors....6-79
6.28.1. Proposed Management Actions for Rights-of-Way and Corridors under the Bighorn Basin Proposed RMP....6-81
6.28.2. BLM-Committed Conservation Measures....6-81
6.28.3. Best Management Practices....6-82
6.28.4. Impact Analysis and Effects Determination....6-82
6.29. Comprehensive Travel and Transportation Management....6-84
6.29.1. Proposed Management Actions for Comprehensive Travel and Transportation Management under the Bighorn Basin Proposed RMP....6-84
6.29.2. BLM-Committed Conservation Measures....6-85
6.29.3. Best Management Practices....6-86
6.29.4. Impact Analysis and Effects Determination....6-86
6.30. Recreation....6-88
6.30.1. Proposed Management Actions for Recreation under the Bighorn Basin Proposed RMP....6-89
6.30.2. BLM-Committed Conservation Measures....6-90
6.30.3. Best Management Practices....6-91

6.30.4. Impact Analysis and Effects Determination 6-91
6.31. Lands with Wilderness Characteristics 6-93
6.31.1. Proposed Management Actions for Lands with Wilderness Characteristics under the Bighorn Basin Proposed RMP 6-93
6.31.2. BLM-Committed Conservation Measures 6-93
6.31.3. Best Management Practices 6-93
6.31.4. Impact Analysis and Effects Determination 6-94
6.32. Livestock Grazing Management 6-94
6.32.1. Proposed Management Actions for Livestock Grazing Management under the Bighorn Basin Proposed RMP 6-95
6.32.2. BLM-Committed Conservation Measures 6-95
6.32.3. Best Management Practices 6-97
6.32.4. Impact Analysis and Effects Determination 6-97
6.33. Special Designations – Areas of Critical Environmental Concern and Other Management Areas 6-99
6.33.1. Proposed Management Actions for Areas of Critical Environmental Concern under the Bighorn Basin Proposed RMP 6-102
6.33.2. BLM-Committed Conservation Measures 6-106
6.33.3. Best Management Practices 6-106
6.33.4. Impact Analysis and Effects Determination 6-106
6.34. Special Designations – National Back Country Byways 6-107
6.34.1. Proposed Management Actions for National Back Country Byways under the Bighorn Basin Proposed RMP 6-108
6.34.2. BLM-Committed Conservation Measures 6-108
6.34.3. Best Management Practices 6-108
6.34.4. Impact Analysis and Effects Determination 6-108
6.35. Special Designations – National Historic Landmarks 6-109
6.35.1. Proposed Management Actions for National Historic Landmarks under the Bighorn Basin Proposed RMP 6-109
6.35.2. BLM-Committed Conservation Measures 6-109
6.35.3. Best Management Practices 6-109
6.35.4. Impact Analysis and Effects Determination 6-109
6.36. Special Designations – National Historic Trails and Other Historic Trails 6-110
6.36.1. Proposed Management Actions for National Historic Trails and Other Historic Trails under the Bighorn Basin Proposed RMP 6-111
6.36.2. BLM-Committed Conservation Measures 6-111
6.36.3. Best Management Practices 6-111
6.36.4. Impact Analysis and Effects Determination 6-112
6.37. Special Designations – Wild and Scenic Rivers 6-113
6.37.1. Proposed Management Actions for Wild and Scenic Rivers under the Bighorn Basin Proposed RMP 6-113
6.37.2. BLM-Committed Conservation Measures 6-113
6.37.3. Best Management Practices 6-113
6.37.4. Impact Analysis and Effects Determination 6-113
6.38. Special Designations – Wilderness Study Areas 6-114
6.38.1. Proposed Management Actions for Wilderness Study Areas under the Bighorn Basin Proposed RMP 6-115
6.38.2. BLM-Committed Conservation Measures 6-115

6.38.3. Best Management Practices 6-115
6.38.4. Impact Analysis and Effects Determination....6-115
6.39. Socioeconomic Resources 6-116
6.39.1. Proposed Management Actions for Socioeconomic Resources under the Bighorn Basin Proposed RMP 6-116
6.39.2. BLM-Committed Conservation Measures 6-116
6.39.3. Best Management Practices 6-117
6.39.4. Impact Analysis and Effects Determination....6-117
6.40. Health and Safety 6-117
6.40.1. Proposed Management Actions for Health and Safety under the Bighorn Basin Proposed RMP....6-118
6.40.2. BLM-Committed Conservation Measures 6-118
6.40.3. Best Management Practices 6-118
6.40.4. Impact Analysis and Effects Determination....6-118
7.0 SUMMARY OF CUMULATIVE EFFECTS 7-1
8.0 SUMMARY OF EFFECTS DETERMINATIONS 8-1
9.0 SUMMARY OF SPECIES-SPECIFIC COORDINATION AND CONSERVATION MEASURES 9-1
9.1. Black-footed Ferret Conservation Measures....9-1
9.1.1. Proposed Protections in the Bighorn Basin Proposed RMP 9-1
9.1.2. Conservation Measures Committed to by the BLM 9-1
9.1.3. Best Management Practices 9-3
9.2. Canada Lynx Conservation Measures....9-4
9.2.1. Proposed Protections under the Bighorn Basin Proposed RMP....9-4
9.2.2. Conservation Measures Committed to by the BLM 9-4
9.2.3. Best Management Practices 9-7
9.3. Gray Wolf Conservation Measures....9-9
9.3.1. Proposed Protections under the Bighorn Basin Proposed RMP....9-9
9.3.2. Conservation Measures Committed to by the BLM 9-9
9.3.3. Best Management Practices 9-9
9.4. Grizzly Bear Conservation Measures 9-10
9.4.1. Proposed Protections under the Bighorn Basin Proposed RMP....9-10
9.4.2. Conservation Measures Committed to by the BLM 9-10
9.4.3. Best Management Practices 9-11
9.5. North American Wolverine Conservation Measures....9-12
9.5.1. Proposed Protections under the Bighorn Basin Proposed RMP....9-12
9.5.2. Conservation Measures Committed to by the BLM 9-12
9.5.3. Best Management Practices 9-13
9.6. Ute Ladies'-tresses Conservation Measures....9-13
9.6.1. Proposed Protections under the Bighorn Basin Proposed RMP....9-13
9.6.2. Conservation Measures Committed to by the BLM 9-13
10.0 SUMMARY OF SPECIES STATUS IN THE FUTURE 10-1
11.0 REFERENCES 11-1

LIST OF TABLES

Table 1. Federally Listed Threatened, Endangered, Candidate, and Proposed Species in the Bighorn Basin Planning Area 4-1
Table 2. Habitat Management Plans for the Bighorn Basin Planning Area 6-53
Table 3. Summary of Effects Determinations for Threatened, Endangered, and Proposed Species in the Bighorn Basin Planning Area 8-1

LIST OF FIGURES

Figure 1. Bighorn Basin Planning Area 1-2

APPENDICES

Appendix A - Livestock Grazing Allotments Occurring Within General Grizzly Bear Habitat A-1

ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
AML	Abandoned mine land
APHIS	Animal and Plant Health Inspection Service
AUM	Animal unit month
BA	Biological Assessment
BHBCA	Bighorn Basin Conservation Area
BHBLWG	Bighorn Basin Sage-grouse Local Working Group
BLM	Bureau of Land Management
BMP	Best management practice
BO	Biological Opinion
CBNG	Coalbed natural gas
CFR	Code of Federal Regulations
CO	Carbon monoxide
COA	Condition of approval
CSU	Controlled surface use
CYFO	Bureau of Land Management Cody Field Office
dBA	Decibels with an A-weighted scale
DEQ	Department of Environmental Quality
DPS	Distinct Population Segment
DOI	United States Department of the Interior
EIS	Environmental Impact Statement
ERMA	Extensive Recreation Management Areas
ESA	Endangered Species Act
ESD	Ecological Site Description
FLPMA	Federal Land Policy and Management Act
FMP	Fire Management Plan
FR	Federal Register
GIS	Geographic Information System
GYA	Greater Yellowstone Area
HAP	Hazardous Air Pollutants
H_2S	Hydrogen sulfide
HMA	Herd Management Area
H&RMP	Habitat and Recreation Management Plan
IM	Instruction Memorandum
IMPROVE	Interagency Monitoring of Protected Visual Environments
LAA	May affect, is likely to adversely affect
LAU	Lynx analysis unit
LJ	Likely to jeopardize
MA	Management Area
MI	May Impact
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NE	No Effect
NEPA	National Environmental Policy Act
NHPA	National Historic Policy Act
NHT	National Historic Trail
NI	No Impact
NJ	No Jeopardy
NLAA	May affect, but is not likely to adversely affect
NMFS	National Marine Fisheries Service
NO_x	Nitrogen oxides
NO_2	Nitrogen dioxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	No surface occupancy
NWSRS	National Wild and Scenic Rivers System
O_3	Ozone
OHV	Off-highway vehicle
PCA	Primary Conservation Area
Pb	Lead
PETM	Paleocene-Eocene Thermal Maximum
PFYC	Potential Fossil Yield Classification
PM	Particulate Matter
PRPA	Paleontological Resources Protection Act
RAAT	Reduced Agent Area Treatment
RAMP	Recreation Area Management Plan
RMP	Resource Management Plan
RMZ	Recreation Management Zone
ROD	Record of Decision
ROW	Rights-of-Way
SGIT	Sage-grouse Implementation Team
SMA	Special Management Area
SO_2	Sulfur dioxide
SRMA	Special Recreation Management Area
TLS	Timing limitation stipulation
U.S.	United States
U.S.C.	United States Code

USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
WFO	Bureau of Land Management Worland Field Office
WGFD	Wyoming Game and Fish Department
WHMA	Wildlife Habitat Management Area
WOGCC	Wyoming Oil and Gas Conservation Commission
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WYNDD	Wyoming Natural Diversity Database
YNP	Yellowstone National Park

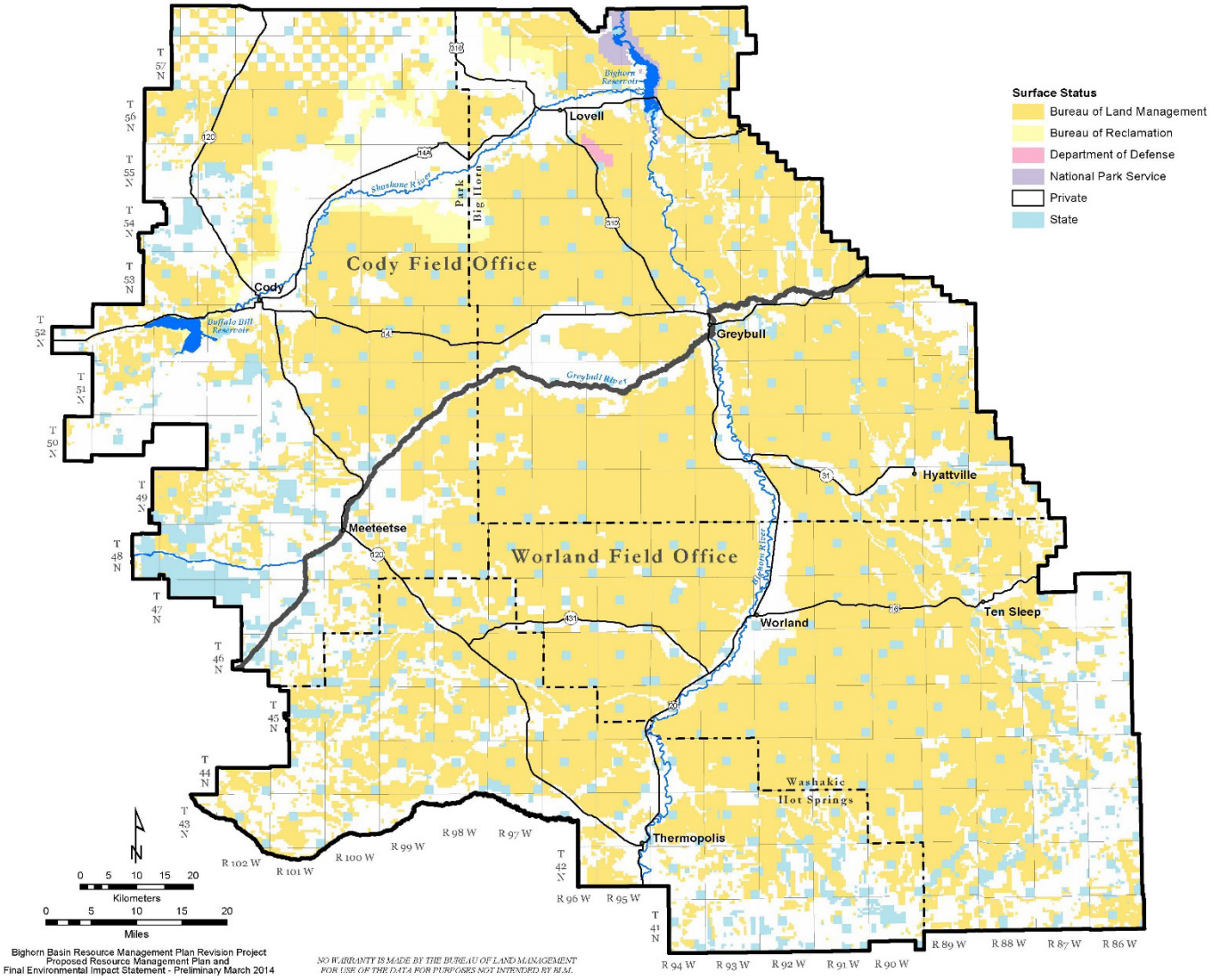
1.0 INTRODUCTION

Endangered Species Act (ESA) Section 7 requires that federal agencies (such as the Bureau of Land Management [BLM]) consult with the U.S. Fish and Wildlife Service (USFWS) and address the potential effects of their proposed actions on plant and animal species listed or proposed for listing in accordance with the ESA. The Worland Field Office (WFO) and Cody Field Office (CYFO) contacted the USFWS regarding Section 7 of the ESA and the Bighorn Basin Resource Management Plan (RMP) Revision Project. The BLM sent a scoping letter to the USFWS requesting comments concerning Section 7 consultation and the Bighorn Basin RMP. On November 13, 2008, the USFWS provided comments on (1) threatened and endangered species, (2) migratory birds, and (3) wetlands and riparian areas. Within these comments was also provided a list of threatened and endangered species likely to occur on BLM-administered land in the CYFO and WFO, for evaluating BLM Section 7 responsibilities. Species occurring in the assessment area that are listed or proposed for listing in accordance with the ESA require the BLM to continue informal consultation and/or prepare a Biological Assessment (BA). The lead agency, in this case the BLM, documents the initial determination of effect in the BA (50 Code of Federal Regulations [CFR] Part 420). If the BA determines that the proposed action may adversely affect a listed species or adversely modify its critical habitat, the BLM must enter into formal consultation with the USFWS. Following receipt of the BA, the USFWS prepares a Biological Opinion, which documents whether the proposed action would jeopardize the continued existence of listed species or adversely modify their critical habitats. The process of formal and informal consultation with the USFWS ensures that BLM actions minimize impacts to listed species and designated critical habitats.

The Bighorn Basin RMP Revision Project is a combined effort to revise RMPs for the BLM CYFO and WFO in a consolidated RMP. This document refers to the combined CYFO and WFO Planning Areas as the Planning Area (Figure 1). The BLM administers public lands in the Planning Area according to three plans – the Cody RMP (BLM 1990) for the CYFO and the Washakie RMP (BLM 1988) and Grass Creek RMP (BLM 1998a) for the WFO. The existing plans have been updated and amended since the BLM adopted them. While the BLM is preparing one Environmental Impact Statement (EIS) to address the impacts of revising the three existing plans, each field office will issue a Record of Decision (ROD) and RMP for its jurisdictional area at the end of the planning process. The Bighorn Basin RMP Revision Project is scheduled for completion by August 2014. When complete, the Bighorn Basin RMP Revision Project will replace the existing RMPs with one approved RMP and ROD for the CYFO and one approved RMP and ROD for the WFO. Revising an existing land use plan is a major federal action for the BLM. The National Environmental Policy Act of 1969 (NEPA), as amended, requires federal agencies to prepare an EIS for major federal actions. The RMP and EIS analyze the impacts of six alternative RMPs for the Planning Area, including the No Action Alternative, the Proposed RMP, and four other action alternatives. This BA analyzes only the effects of the Proposed RMP on species listed and proposed for listing.

The purpose of the Bighorn Basin RMP is to provide a comprehensive and environmentally adequate framework for managing and allocating uses of the BLM-administered public lands and resources in the Planning Area. The Planning Area covers approximately 5.6 million acres of federal, state, and private lands in four Wyoming counties (Big Horn, Park, Washakie, and Hot Springs). Of the total area, 3.1 million acres are BLM-administered surface lands and 4.2 million acres are federal mineral estate. The CYFO extends west beyond the Bighorn Basin. However, generally, the United States Department of Agriculture Forest Service and the National Park Service manage those lands; therefore, the RMP and EIS (and the BA) do not consider them.

Figure 1. Bighorn Basin Planning Area



The objectives of the Bighorn Basin RMP are to provide specific management direction to prevent or address potential conflicts among energy resources development, recreational activities, livestock grazing management, important wildlife habitats, and other important land and resource uses in the Planning Area, and to determine the appropriate levels and timing of these activities. Section 6.0, Analysis of Proposed Management Actions and Effects, in this BA briefly describes the actions for each major functional activity (e.g., air quality, cultural resources, livestock grazing management, etc.), their interrelated and interdependent actions, and their general occurrence in the Planning Area.

1.1. Proposed Resource Management Plan

The Proposed RMP generally increases conservation of physical, biological, and heritage and visual resources compared to current management, including the designation of three Management Areas and 12 Areas of Critical Environmental Concern (ACECs). The Proposed RMP also emphasizes moderate constraints on resource uses, and reclamation and mitigation requirements to reduce impacts to resource values.

1.1.1. Resource Uses and Support

Under the Proposed RMP, 3,991,815 acres are available for locatable mineral entry, while 211,398 acres are withdrawn; existing withdrawals and segregations not carried forward are allowed to expire. In addition, approximately 292,353 acres of federal mineral estate are closed to oil and gas leasing in the Planning Area. The remaining federal mineral estate in the Planning Area is open to oil and gas leasing subject to the following constraints: 911,814 acres are subject to the standard lease form, 1,714,685 acres are subject to moderate constraints, and 1,221,142 acres are subject to major constraints. The Proposed RMP delineates Oil and Gas Management Areas to be managed primarily for oil and gas exploration and development. The Proposed RMP makes 4,023,356 acres available for mineral materials disposal and closes 184,193 acres to mineral materials disposal.

Land resource program actions under the Proposed RMP identify 66,363 acres of BLM-administered land in the Planning Area as available for disposal. Under the Proposed RMP, the BLM administers 2,408,662 acres as right-of-way (ROW) avoidance/mitigation areas and 40,802 acres as ROW exclusion areas. Under the Proposed RMP, 1,316,641 acres are open to renewable energy development. Travel management designations under the Proposed RMP include 61,010 acres closed to motorized vehicle use, 1,955,943 acres limited to existing roads and trails, 1,159,597 acres limited to designated roads and trails, and 5,885 acres open to motorized vehicle use. Under the Proposed RMP, the BLM considers areas open to over-snow vehicles on a case-by-case basis.

The Proposed RMP designates recreation management areas, including special recreation management areas (SRMAs), recreation management zones (RMZs), and extensive recreation management areas (ERMAs). Other resource uses, such as minerals development, are typically allowed in these areas if adverse impacts can be mitigated. A no surface occupancy (NSO) restriction is applied to all developed recreation sites, national and regional trails, local trail systems, and interpretive sites with exceptional recreation value. Under the Proposed RMP, the BLM maintains 13 SRMAs – Absaroka Mountain Foothills (42,615 acres), Badlands (211,561 acres), Bighorn River (2,496 acres), West Slope (320,704 acres in CYFO), Rivers (6,047 acres), McCullough Peaks (160,838 acres), Basin Gardens Play Area (4,421 acres), Canyon Creek (3,675 acres), Horse Pasture (144 acres), Middle Fork of the Powder River (14,644 acres), West Slope (191,465 acres in WFO), Beck Lake (6,473 acres), and Newton Lake Ridge (1,949 acres). All land not included in an SRMA or within the Absaroka, Bighorn River, Rattlesnake Ridge, Red Canyon Creek, or Southern Bighorns ERMAs is included in the Bighorn Basin ERMA. Under the Proposed

RMP, the BLM closes 5,009 acres in the Planning Area to livestock grazing. However, grazing is allowed in closed areas as a tool to maintain or improve resource conditions. To reduce user conflict, new resource uses are mitigated to minimize or avoid conflict with livestock grazing.

1.1.2. Special Designations

The Proposed RMP includes 12 ACECs – the 9 existing areas and 3 new ACECs. The three proposed ACECs are Clarks Fork Canyon; Paleocene, Eocene Thermal Maximum (PETM); and Sheep Mountain. The Proposed RMP also designates the Chapman Bench Management Area for the retention and success of sensitive species habitat, and manages a portion of the Little Mountain area as the Craig Thomas Little Mountain Special Management Area. The Proposed RMP designates the Absaroka Front Management Area along the western edge of the Planning Area and the eastern flank of the Yellowstone ecosystem for increased protection of big game and sensitive species. In addition to retaining the Red Gulch/Alkali Back National Country Byway, the Proposed RMP designates the Hyattville Logging Road as a primitive National Back Country Byway. The Proposed RMP also provides protective measures for the Heart Mountain National Historic Landmark, Nez Perce National Historic Trail, and other trails. The BLM manages all seven wild and scenic river-eligible and draft suitable waterways as unsuitable for inclusion in the National Wild and Scenic Rivers System and releases these areas to other uses. The Proposed RMP limits motorized vehicle use to designated roads and trails within six wilderness study areas (WSAs) and closes four WSAs to motorized vehicle use.

1.1.3. Physical, Biological, and Heritage Resources

Under the Proposed RMP, management of physical resources emphasizes moderate constraints on resource uses and mitigation of impacts. Reclamation practices include beginning interim and final reclamation at the earliest feasible times, and in disturbed areas, reestablishing healthy native or desired plant communities based on pre-disturbance/desired plant species composition. The BLM requires reclamation plans, stipulations, or measures before it will authorize surface-disturbing activities. Under the Proposed RMP, the BLM assesses erosion and soil stability during rangeland health evaluations, and allows the surface discharge of produced water from new activities where compatible with other resource objectives.

Management of biological resources under the Proposed RMP emphasizes protection of these resources through avoidance and mitigation of surface-disturbing activities and moderate resource constraints. Vegetation resources are managed to maintain contiguous blocks of native plant communities. For fish species, the BLM avoids surface-disturbing activities within ¼ mile of any waters the Wyoming Game and Fish Department rates as Blue Ribbon or Red Ribbon fisheries (trout streams of national or state-wide importance). The Proposed RMP designates the Absaroka Front Management Area with a mix of controlled surface use (CSU), timing limitation stipulation (TLS), NSO, and unavailable for leasing stipulations.

The Proposed RMP generally protects special status species. Under the Proposed RMP, the BLM applies an NSO restriction on suitable habitat for black-footed ferret reintroduction and on the Sage Creek Prairie Dog Town. The BLM requires avoidance of range improvement projects and aerial application of herbicides within ¼ mile and ½ mile, respectively, of special status plant species populations.

Wild horse management under the Proposed RMP balances providing opportunities for public viewing of wild horses with protection of horse health and protection of environmental resources. Opportunities for public viewing, education, and interpretation of wild horses are promoted in the

McCullough Peaks Herd Management Area (HMA), but special recreation permits using domestic horses would be prohibited in the McCullough Peaks HMA and avoided in the Fifteenmile HMA. Under the Proposed RMP, the BLM applies seasonal restrictions on surface-disturbing activities from February 1 to July 31 to prevent foal abandonment or jeopardy of wild horse health and welfare.

Under the Proposed RMP, the BLM protects the foreground of important cultural sites up to 3 miles (or the visual horizon, whichever is closer), using best management practices to avoid or mitigate adverse impacts from mineral development or other surface-disturbing activities. The BLM attaches standard Paleontological Resources Protection Stipulations to authorizations for surface-disturbing activities on Potential Fossil Yield Classification (PFYC) 3, 4, or 5 formations and requires an on-the-ground survey before it will approve surface-disturbing activities or land-disposal actions. The BLM would monitor surface-disturbing activities for PFYC 3, 4, and 5 formations. The BLM allows surface-disturbing activities within at least 100 feet of a paleontological locality if the impacts can be adequately mitigated, but prohibits the resumption of activity within 100 feet of a paleontological discovery until the authorized officer issues a written authorization to proceed.

Under the Proposed RMP, the BLM manages the following visual resource management (VRM) class allocations for BLM-administered surface lands in the Planning Area: 141,127 acres of VRM Class I, 731,812 acres of VRM Class II, 738,531 acres of VRM Class III, and 1,580,470 acres of VRM Class IV. Under the Proposed RMP, 37 acres are unclassified. Under the Proposed RMP, lands with wilderness characteristics (49,397 acres) would be managed consistent with other resource objectives. Lands with wilderness characteristics would not be managed for naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation.

This page intentionally left blank.

2.0 CONSULTATION AND BIOLOGICAL ASSESSMENT OBJECTIVES

Under provisions of the Endangered Species Act of 1973 (ESA), as amended (16 United States Code [U.S.C.] Section 1531 et seq.), federal agencies are directed to conserve threatened and endangered species and the habitats in which these species are found. Federal agencies also are required to ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of endangered and threatened species or their critical habitats. The ESA requires action agencies, such as the Bureau of Land Management (BLM), to consult or confer with the United States Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) when there is discretionary federal involvement or control over the action. Formal consultation becomes necessary when the action agency requests consultation after determining the Proposed Resource Management Plan (RMP) is likely to adversely affect listed species or critical habitats, or the aforementioned federal agencies do not concur with the action agency's finding (USFWS 1998). Under the 1994 Memorandum of Understanding (MOU) and the 2000 Memorandum of Agreement (MOA) among the BLM, the United States Department of Agriculture (USDA) Forest Service, the USFWS, and the NMFS, all four agencies agreed to promote the conservation of candidate and proposed species and streamline the Section 7 consultation and coordination process.

This programmatic biological assessment (BA) provides documentation for the Bighorn Basin Proposed RMP to meet federal requirements and agreements among the federal agencies identified above. It addresses federally listed threatened and endangered, and proposed species and is prepared under 1973 ESA Section 7 regulations, in accordance with USFWS and NMFS 1998 procedures, and in accordance with the 1994 MOU and 2000 MOA. As appropriate, the BLM will perform site-specific evaluations for activities authorized under the Bighorn Basin Proposed RMP. The BLM will consult with the USFWS for activities authorized under the Bighorn Basin Proposed RMP that may affect threatened, endangered, or proposed species. In addition, in compliance with BLM Manual 6840, the BLM will address potential effects to special status species.

Objectives of this BA include the following:

- Summarize the biology, distribution, and habitats of species listed or proposed for listing as threatened or endangered occurring in the Planning Area.
- Assess the past, current, and future effects (direct and indirect) of the Proposed RMP actions to the species.
- Assess the cumulative effects of state and private actions on the subject species.
- Make an effects determination for each species based on the actions identified in the RMP.
- Document conservation measures to foster the welfare of the subject species.
- Predict the expected future status of the subject species based on the effects analysis.

The outcome of this BA will determine the need for and types of conferencing and consultation with the USFWS. In addition, during implementation of specific actions identified in the RMP, potential effects to federally listed species will be evaluated again, and any necessary consultation with the USFWS will be initiated, as appropriate.

Emergency consultation may be necessary when emergency actions (i.e., wildland fires, disasters, casualties, national defense or security emergencies, including response activities taken to prevent imminent loss of human life or property) are required that may affect listed species and/or critical habitats, and the federal action agency may not have the time for the normal ESA- or National Environmental Policy Act (NEPA)-required administrative work under nonemergency conditions.

Emergency consultations will consider the action agency's critical mission, while ensuring that anticipated actions will not violate ESA section 7(a) (2) or 7(d).

3.0 OVERVIEW OF THE PLANNING AREA

The Planning Area comprises 3,187,814 acres of Bureau of Land Management (BLM)-administered federal surface lands and 4,203,213 acres of BLM-administered federal mineral estate in Big Horn, Hot Springs, Park, and Washakie counties in north-central Wyoming. The Cody Field Office (CYFO) extends west beyond the Bighorn Basin, but generally, the Forest Service and the National Park Service manage those lands. In each of the four counties, there are large contiguous areas of BLM-administered land and smaller tracts of BLM-administered land interspersed with private and state land. There is a checkerboard pattern of state, private, and BLM-administered lands in the northwestern portion of the Planning Area.

The Planning Area lays within two Major Land Resource Areas – the Northern Intermountain Desertic Basins and the Central Rocky Mountains. The Planning Area is in the Bighorn Basin, an asymmetric heart-shaped intermontane basin of the Rocky Mountain foreland in north-central Wyoming and south-central Montana. The basin is surrounded by mountainous uplifts, including the Big Horn and Pryor Mountains to the east and northeast, respectively, the Owl Creek Mountains to the south, the Absaroka Range to the west, and the Beartooth Mountains to the northwest (Roberts and Rossi 1999). The central low-lying part of the basin is dominated by desert shrubland and grasslands. At high elevations, the dominant vegetation transitions from sagebrush and grassland to mountain shrublands, and ultimately, to coniferous forests.

The Planning Area generally has a dry, windswept, rain-shadow climate like much of Wyoming, but variations in elevation have a substantial effect on vegetation types and the suitability of areas for agriculture and grazing. The topography of the Planning Area varies from rolling plains, flat mesas, and badlands to alluvial valleys, benches, foothills, and mountains (BLM 1993). Elevations in the Planning Area range from approximately 3,552 feet above mean sea level in the middle of the basin to 11,657 feet above mean sea level in the higher mountain ranges. Precipitation in the central basin is less than 10 inches per year, but up to 40 or more inches per year in the mountainous regions surrounding the basin (BLM 1993). The average annual temperature in the basin is approximately 44 degrees Fahrenheit, but significantly colder in the mountain regions.

Soils and vegetation in the Planning Area generally provide rangeland suitable for year-round livestock grazing in the lower elevations. Higher elevations are generally grazed during summer and/or fall. Livestock grazing includes the grazing of domestic animals such as cattle, sheep, horses, and bison.

Agricultural production in the Planning Area is limited by low precipitation and scarcity of surface water. Major crops in the Planning Area include spring wheat, barley, oats, dry beans, sugar beets, alfalfa hay, and corn (Young et al. 1999).

The Bighorn River and its tributaries (including the Shoshone, Nowood, Greybull, and Wood rivers, and Owl, Gooseberry, Cottonwood, Shell, Nowater, Kirby, and Fifteenmile Creeks) drain the Bighorn Basin. The Clarks Fork of the Yellowstone River also drains the basin.

Habitats in the Bighorn Basin are diverse and vary depending on such factors as soil type, annual precipitation, and elevation. Major habitat types in the Planning Area include sagebrush/grassland, salt desert shrub, agricultural crop and pasture lands, mixed mountain shrub, mixed conifer and aspen woodlands at higher elevations, cottonwood-riparian corridors, and urban areas (BHBLWG 2007).

The paragraphs that follow describe three ecoregions in the Planning Area (after Griffith and Omernik 2009).

The Wyoming Basin ecoregion is a broad arid intermontane basin interrupted by hills and low mountains and dominated by grasslands and shrublands. Nearly surrounded by forest-covered mountains, the region is drier than the Northwestern Great Plains to the northeast and does not have the extensive cover of pinyon-juniper woodland found in the plateaus to the south. Much of the region is used for livestock grazing, although many areas lack sufficient forage to support this activity. The region contains major natural gas and petroleum producing fields. The Wyoming Basin also has extensive coal deposits along with areas of trona, bentonite, clay, and uranium mining (Griffith and Omernik 2009).

The Bighorn Basin ecoregion is an arid depression in the rainshadow of the Beartooth Mountains, Absaroka Range, Bighorn Mountains and Pryor Mountains. This region receives more precipitation than the neighboring Bighorn Salt Desert Shrub Basin that lie at lower elevations. The soils, formed from sedimentary rocks such as shale, sandstone, and siltstone, are also not as alkaline as those in the Bighorn Salt Desert Shrub Basin ecoregion. This higher portion of the greater Bighorn Basin forms a transition from arid desert shrubland to semiarid shrubland dominated by Wyoming big sagebrush that grows best in slightly wetter, more permeable soil (Griffith and Omernik 2009). There are large oil, gas, and coal deposits in this ecoregion.

The Bighorn Salt Desert Shrub Basin ecoregion comprises two large, arid, alkaline depressions surrounded by mountains. This ecoregion is distinguished from the other salt desert shrub basins because it forms a larger contiguous area somewhat geographically isolated from the scattered small basins and playas in southern Wyoming. It also experiences greater human influence because of its proximity to major rivers (Bighorn, Shoshone, and Greybull rivers) that provide water for irrigation. Soils are alkaline or gypsum bearing and are derived from sedimentary rocks, such as shale, sandstone, and siltstone, or windblown material. The arid climate supports desert shrubs and grasses. Oil, bentonite, and coal deposits are extensive throughout the basin (Griffith and Omernik 2009).

3.1. Big Horn County

Big Horn County is comprised of approximately 1,664,791 surface acres in the Planning Area, of which the BLM administers approximately 1,157,922 acres. In addition, the BLM administers approximately 1,287,659 acres of federal mineral estate in Big Horn County. A portion of the Big Horn County National Recreation Area, which straddles the Wyoming-Montana state line, is in Big Horn County. The United States (U.S.) Department of Defense also administers a small parcel of land in Big Horn County. The Bighorn River watershed, which drains the entire basin, flows through the middle of the county. Bighorn National Forest is along the eastern portion of the county and is comprised primarily of the foothills and higher mountain regions of the Big Horn Mountains. The principle industries in Big Horn County are bentonite mining, farming, sugar-beet and bean processing, and tourism. U.S. Highways 20 and 310 are the main north-south arteries in Big Horn County. U.S. Highway 14 traverses east-west, intersecting Highway 20 in Greybull.

3.2. Hot Springs County

The smallest county by area in Wyoming, Hot Springs County also has the fewest BLM-administered surface and mineral estate acres in the Planning Area. Hot Springs County is comprised of approximately 962,403 surface acres in the Planning Area, of which the BLM administers approximately 486,160 acres. In addition, the BLM administers approximately 719,404 acres of federal mineral estate in Hot Springs County. Most of the Wind River Canyon, with the Owl Creek Mountains on the west and the Bridger Mountains on the east, is in Hot Springs County. The Big Horn Mountains ring the eastern

portion of the county, with the Absaroka Range to the west. State Highway 789 and U.S. Highway 20 are the main north-south corridors in Hot Springs County. The county is also served by Wyoming Highway 120, which runs northwest from Thermopolis, through Meeteetse, and on to Cody.

3.3. Park County

Park County is comprised of approximately 1,618,070 surface acres in the Planning Area, of which the BLM administers approximately 624,588 acres. In addition, the BLM administers approximately 1,049,050 acres of federal mineral estate in Park County. The largest county by area in the Planning Area, Park County also is the most populous, with approximately 27,000 residents in 2005 (Headwaters Economics 2007). A large portion of Park County is in Yellowstone National Park, which the National Park Service administers. What is now Park County was first a part of Sweetwater County, then Fremont County, and then Big Horn County, until 1909 when the Wyoming State Legislature defined and set aside the boundaries of Park County. Cody, Wyoming, named for William "Buffalo Bill" Cody, was chosen as the county seat the following year. Three rivers flow through Park County – the Greybull and Shoshone Rivers, which are tributaries to the Bighorn River, and the Clarks Fork of the Yellowstone River, which flows into the Yellowstone River. Three highways serve Park County (U.S. Highway 14-16-20 east and west, U.S. Highway 14 Alternate, and Wyoming 120 north and south). The major industries in Park County are oil and gas production, agriculture, and tourism.

3.4. Washakie County

Washakie County is comprised of approximately 1,398,641 surface acres in the Planning Area, of which the BLM administers approximately 918,577 acres. In addition, the BLM administers approximately 1,143,454 acres of federal mineral estate in Washakie County. The western part of Washakie County is intensively irrigated farmlands that lie adjacent to the Bighorn River, which winds its way through Worland. There are other farmlands along Gooseberry and Cottonwood creeks. The agriculture of the eastern part of Washakie County is based primarily on the production of sheep and cattle (Washakie County Conservation District 2009). U.S. Highway 16 is the main east-west corridor in the county, passing over the Big Horn Mountains and through Ten Sleep, before turning north in Worland. State Highway 789 and U.S. Highway 20 are the main north-south arteries in Washakie County.

This page intentionally left blank.

4.0 CURRENT STATUS AND HABITAT USE OF SPECIAL STATUS SPECIES

Special status species are defined in this document as those listed as threatened or endangered, are proposed for listing under the Endangered Species Act (ESA). The United States Fish and Wildlife Service (USFWS) Ecological Service office in Cheyenne, Wyoming, provided a list of threatened, endangered, proposed, and candidate species that may occur in the Planning Area. The USFWS letter dated November 13, 2008, contained five of the eight species listed in Table 1 (USFWS 2008a). On March 26, 2010, the protections for the grizzly bear were reinstated in the Greater Yellowstone Ecosystem in compliance with a court order [Federal Register (FR) (Volume 75, Number 58) Rules and Regulations Page 14496-14498 (75 FR 14496-14498)]. On June 29, 2010, the USFWS instituted a proposed rule to list the mountain plover as threatened (75 FR 37353-37358) and this species was included in the Draft Biological Assessment (BA) analysis. On May 12, 2011, the USFWS announced the decision to withdraw the proposed listing of the mountain plover as a threatened species under the ESA (76 FR 27756) and due to this withdrawal, the analysis for mountain plover was removed from this Final BA. On February 4, 2013, the USFWS instituted a proposed rule to list the distinct population segment (DPS) of the North American wolverine occurring in the contiguous United States as threatened (78 FR 7864). Due to these rulings, the grizzly bear and North American wolverine are included in this BA, while the mountain plover will not be discussed further. No critical habitat is designated within the Bighorn Basin Planning Area for the eight species listed in Table 1.

Table 1. Federally Listed Threatened, Endangered, Candidate, and Proposed Species in the Bighorn Basin Planning Area

Common Name	Scientific Name	Status[1]	Expected Occurrence
Black-footed ferret	*Mustela nigripes*	Endangered	Prairie dog towns
Canada lynx	*Lynx canadensis*	Threatened	Montane forests with spruce/fir/late-seral conifer forest on slopes of 8 to 12 degrees with abundance of snowshoe hare and red squirrel with low human disturbance
Gray wolf	*Canis lupus*	Experimental, Non-essential	Greater Yellowstone Ecosystem
Greater Sage-Grouse	*Centrocercus urophasianus*	Candidate	Sagebrush communities
Grizzly bear	*Ursus arctos horribilis*	Threatened	Montane forests
Mountain plover	*Charadrius montanus*	Proposed listing of threatened withdrawn May 12, 2011	Grasslands and prairie dog towns
North American wolverine	*Gulo luscus*	Proposed	Boreal forest and/or alpine habitats with elevations above 9,500 feet in the Absaroka and Owl Creek mountain ranges
Ute ladies'-tresses	*Spiranthes diluvialis*	Threatened	Seasonally moist soils and wet meadows of drainages below 7,000 feet above mean sea level.

[1]Status refers to federal status in accordance with the Endangered Species Act.

4.1. Black-footed Ferret

4.1.1. Status

The black-footed ferret was listed as endangered on March 11, 1967 in the United States and by the USFWS under a precursor to the ESA of 1973. The Wyoming Bureau of Land Management (BLM) completed the Final *Statewide Programmatic Biological Assessment: Black-footed Ferret (Mustela nigripes)* in August 2005. Consideration of effects and conservation measures identified in the assessment are included in this BA where appropriate. Unless otherwise referenced, the species information in this report came from the statewide BA (BLM 2005a).

A captive-breeding program began in 1985 and continues today. The USFWS designated non-essential experimental populations in northwestern Colorado and northeastern Utah, north-central South Dakota, Arizona, Montana, and Wyoming (including the Shirley Basin) for the purpose of reintroducing ferrets to these areas. This designation allows for more flexibility in managing new populations. In Wyoming, the black-footed ferret's state conservation status is S1, meaning it is critically imperiled (WYNDD 2010). The Black-footed Ferret Recovery Plan was approved in 1988 (USFWS 1988), and it is currently being revised (USFWS 2009a).

On February 2, 2004, the USFWS issued a block clearance letter and map indicating that ferret surveys are no longer necessary in black-tailed prairie dog (*Cynomys ludovicianus*) towns statewide or in white-tailed prairie dog (*Cynomys leucurus*) towns except those noted in an attachment to the letter (USFWS 2004).

In November 2008, the USFWS released *Black-footed Ferret 5-Year Status Review: Summary and Evaluation* (USFWS 2008b). By 2010, the 1988 Recovery Plan aimed to establish a pre-breeding population of 1,500 free-ranging adults in 10 or more populations with no fewer than 30 breeding adults in any population. This aim has not yet been fully met, although several populations have been successfully established that have more than 30 breeding adults.

On August 19, 2009, the USFWS released a Spotlight Species Action Plan for the Black-footed Ferret. In the action plan, the USFWS targeted a 5-year goal (2009-2014) for ferret recovery with continued improvement in the species' status and with an increased number of ferret reintroduction sites (USFWS 2009a).

On March 6, 2013, the USFWS issued another block clearance letter in response to a request from the Wyoming Game and Fish Department (WGFD) for the USFWS to "block clear" the balance of Wyoming, for wild black-footed ferrets, and develop a statewide rule, under section 10(j) of the Endangered Species Act. The change implemented within this letter expands the block clearance area currently in place for black-tailed prairie dog range in eastern Wyoming and in portions of the white-tailed prairie dog range to include the entire state of Wyoming (USFWS 2013).

4.1.2. Life History

A member of the weasel family (*Mustelidae*), the black-footed ferret is a long, slender-bodied animal with relatively short limbs. Black-footed ferrets have a black-masked face, black legs, and a black-tipped tail, and they have yellowish buff upper body parts (USFWS 2008b). Black-footed ferrets are the only ferret native to North America (USFWS 1988). The black-footed ferret is a medium sized mustelid typically weighing 1.4 to 2.5 pounds (645 to 1,125 grams) and measures 19 to 24 inches (479 to 600 millimeters) long (USFWS 2008b). Black-footed ferrets generally are nocturnal carnivores, but

occasionally are active aboveground during the day. Although prairie dogs make up most of the black-footed ferret's diet, these animals also feed on rabbits, mice, voles, ground squirrels, pocket gophers, birds, and insects.

Black-footed ferrets are solitary except during the breeding season or when females are caring for young. Breeding occurs in April or May and gestation is between 42 and 45 days (NatureServe 2009). The average litter size is 3.5 and the range is from 1 to 5. The young appear aboveground usually in July, and disperse in fall. Some females reproduce as yearlings. Black-footed ferrets are secretive and rarely observed except at night (NatureServe 2009).

Predators of the black-footed ferret include great-horned owls (*Bubo virginianus*), golden eagles (*Aquila chrysaetos*), and coyotes (*Canis latrans*). Potential, but undocumented predators, include badgers (*Taxidea taxus*), bobcats (*Lynx rufus*), red foxes (*Vulpes vulpes*), prairie falcons (*Falco mexicanus*), and ferruginous hawks (*Buteo regalis*).

4.1.3. Habitat Requirements

Black-footed ferrets are almost exclusively associated with prairie dogs and prairie dog towns (USFWS 1988). In addition to using prairie dogs as a food source, black-footed ferrets use prairie dog burrows for shelter, breeding, and brood-rearing. The size and density of prairie dog towns may be the most important factors comprising suitable habitats for black-footed ferrets. Black-footed ferrets are not normally found in black-tailed prairie dog towns or complexes of fewer than 80 acres, or in white-tailed prairie dog towns or complexes of fewer than 200 acres.

4.1.4. Regional and Local Distribution

Historically, the distribution of black-footed ferrets closely matched that of prairie dogs. Black-footed ferrets occurred throughout the Great Plains, from southern Canada down to Texas, and from Arizona and Montana to eastern Nebraska. By the 1970s, the only known population was in South Dakota, but it soon disappeared. In 1981, another population was discovered in Meeteetse, Wyoming. This population was monitored, and in 1986 and 1987 all animals were brought into captivity because of outbreaks of plague and canine distemper.

In 1991, the first reintroduction of captive-raised black-footed ferrets occurred in the 2,068 square mile white-tailed prairie dog complex in the Shirley Basin/Medicine Bow Management Area (Shirley Basin). Over a 4-year period at this site, 228 ferrets were released. This USFWS designated this population as a non-essential experimental population in accordance with the ESA. Reintroduction efforts in Wyoming were suspended in 1995 due to sylvatic plague. Successful reproduction in the wild has occurred. The present distribution of known ferrets in Wyoming is limited to the one population in the Shirley Basin. Ferret numbers at this site went from a low of 19 animals in June 2002, to 52 animals and 10 litters in September 2003, and 85 to 100 animals with 21 litters in September 2004. This introduced population is entirely in Albany and Carbon counties, with some animals east of the Medicine Bow River.

Cody Field Office: The last known wild population of black-footed ferrets in the Cody Field Office (CYFO) was found on a white-tailed prairie dog complex near Meeteetse in 1981. In 1984, this population included 129 wild ferrets. Almost the entire Meeteetse population may have been eliminated by a prairie dog plague and canine distemper. The last known wild ferrets from this site were captured in February 1987. This site, encompassing about three Townships, is identified as essential habitat in the Cody Resource Management Plan (RMP). Other than the population at Meeteetse, of which there is one record in the database, there is also a record from 15 miles southeast of Lovell Lake in Bighorn County

from 1972. Prairie dog status within the Cody Field Office: Prairie dog (*Cynomys* sp.) survey data collected between 1980 and 1989 were compared with data from a 2001–2005 survey. These data suggest that the white-tailed prairie dog population declined in distribution and activity. Occupied active area decreased 71 percent and decreased 37 percent in active town abundance. Declines in occupied area for the Meeteetse Metapopulation (87 percent) were greater than declines for the remaining population (Basin Metapopulation [39 percent]). There was also a very small population of black-tailed prairie dogs that increased 8 percent to 77.4 ha (191.3 ac). (Harrell and Marks 2009).

Worland Field Office: In the Bighorn Basin Planning Area, there are three records of black-footed ferrets in the Worland Field Office (WFO) management area (one from 25 miles east of Thermopolis in Hot Springs County from in 1972, one from 10 miles north of Tensleep in 1975, and another 20 miles east of Worland in 1974 from Washakie County). Although both prairie dog species occurred in the Planning Area historically, recent survey and mapping work have revealed that black-tailed prairie dogs are presently absent from the WFO, and have been since extensive mapping was performed in 1977 and in the mid-1980s. There are two important white-tailed prairie dog complexes in the WFO management area – Manderson and Fifteenmile. Fifteenmile was a very active complex in the 1977 inventory, but plague epizootics in 1981 and 1982 severely reduced the population. New prairie dog inventories were initiated in 1999 and are ongoing, as funding allows.

4.1.5. Threats

The main causes of decline in the black-footed ferret population include habitat conversion to agricultural uses and urbanization, efforts to eliminate prairie dogs, and the sylvatic plague (NatureServe 2009). Approximately one-third of the ferret's historical range has been converted to land uses that no longer support prairie dogs (e.g., cropland). However extensive grasslands and rangelands to support black-footed ferret recovery goals remain, and the USFWS does not consider the present or future loss of habitat from cropland conversion to be a threat (USFWS 2009a).

Rodenticide use has been responsible for extensive reduction of prairie dog habitat and was the most important factor in the initial large-scale population reductions of the ferret. Furthermore, rodenticides used to kill prairie dogs throughout most of the 20th Century also secondarily poisoned ferrets. Certain rodenticides (chlorophacinone and diphacinone) that can cause secondary poisoning to non-target animals, including ferrets, are still used. However, alternatives such as zinc phosphide have minimal secondary toxicity problems. Widespread use of rodenticides continues, but the government-sponsored eradication programs appear to have ceased. Most ferret reintroduction sites are able to balance rodenticide use and prairie dog/ferret conservation; the greater challenge is ensuring rodenticides use does not preclude or delay opportunities at certain locations before ferrets are reintroduced. The USFWS considers the threat from prairie dog poisoning to be a medium magnitude, imminent threat (USFWS 2009a).

The sylvatic plague, a disease that has wiped out large numbers of prairie dogs, also has affected black-footed ferrets. The sylvatic plague kills individual black-footed ferrets and reduces prey abundance. With aggressive proactive management, the threat of plague has been reduced from high to medium magnitude of imminent threat (USFWS 2009a). Black-footed ferrets also are susceptible to canine distemper, which can be fatal to infected individuals.

As previously mentioned, the USFWS has issued a "block clearance" letter for wild, non-introduced black-footed ferrets throughout the entire State of Wyoming (USFWS 2013). All of the BLM programs evaluated in this document present *no effect (NE)* and will not jeopardize the continued existence of the black-footed ferret due to the negligible likelihood of a wild population of this species occurring in the

Planning Area. As a result, the black-footed ferret is not analyzed in further detail in Section 6.0 of this document.

4.2. Canada Lynx

4.2.1. Status

The Canada lynx was listed as a federally threatened species on March 24, 2000, pursuant to the ESA. Wyoming BLM completed the *Final Statewide Programmatic Canada Lynx (Lynx canadensis) Biological Assessment* in July 2005 (BLM 2005b). Consideration of effects and conservation measures identified in the assessment are included in this BA where appropriate. Unless otherwise referenced, the species information in this report came from *Final Statewide Programmatic Canada Lynx (Lynx canadensis) Biological Assessment*.

In response to the listing decision in 2000, the BLM and the United States Forest Service (USFS) entered into conservation agreements with the USFWS. In these agreements, the agencies acknowledged the Lynx Conservation Assessment and Strategy (LCAS) as one of the sources of best available science to assist in conservation of lynx. The LCAS was integral in providing state and federal agencies science and guidance in delineating the initial LAU boundaries in 2000, and in 2005 formulating conservation measures for the *Statewide Programmatic Canada Lynx Biological Assessment* mentioned above. In 2013 the Interagency Lynx Biology Team updated the LCAS (Interagency Lynx Biology Team 2013) incorporating new science since 2000. The BLM and National Park Service continue to rely on the LCAS along with other sources of information to guide management of lynx habitat.

On July 8, 1998, the USFWS published a proposed rule to list the Canada lynx as threatened (63 *Federal Register* FR 36994). On March 24, 2000, the USFWS published a final rule listing the Canada lynx as threatened, and found that the designation of critical habitat for the Canada lynx was prudent (65 FR 16052). As a result of an order from the U.S. District Court for the District of Columbia (Court), the USFWS again determined the Canada lynx was threatened in a clarification of findings published on July 3, 2003 (68 FR 40076). The Court ordered the USFWS to propose critical habitat by November 1, 2005, and issue a final critical habitat rule by November 1, 2006. The final rule designating critical habitat for Canada lynx was published in the *Federal Register* on November 9, 2006 (71 FR 66007). On July 20, 2007, the USFWS announced it would review the November 9, 2006, final rule after questions were raised about the integrity of scientific information used and whether the decision was consistent with the appropriate legal standards. Based on its review of the previous final critical habitat designation, the USFWS determined it necessary to revise critical habitat. On January 15, 2008, the Court ordered the USFWS to propose a rule for revised critical habitat by February 15, 2008, and issue a final rule for revised critical habitat by February 15, 2009 (USFWS 2009b).

In March 2009, the USFWS released Final Rule for the Revised Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx. In total, approximately 39,000 square miles fall within the boundaries of the revised critical habitat designation, in five units in the States of Maine, Minnesota, Montana, Wyoming, Idaho, and Washington. This rule went into effect on March 27, 2009.

On September 25, 2013, in response to two court orders resulting from the 2009 critical habitat designation, the USFWS published a proposed rule to revise the critical habitat designation for the contiguous United States Distinct Population Segment (DPS) of the Canada lynx. The proposed rule expanded the boundaries of the critical habitat designation by 632 square miles, a 1.6 percent increase

of the 2009 designation. The proposed rule also revised the definition of the lynx DPS to ensure that all lynx in the contiguous United States are protected under the Endangered Species Act. No designated critical habitat occurs in the Bighorn Basin Planning Area.

4.2.2. Life History

The Canada lynx is a medium-sized, short-bodied cat with long legs and an overall stocky build. Paws are large and well-furred, ears tufted, tail blunt and short, and the head has a flared facial ruff. Winter coloring is typically grizzled brownish-gray mixed with buff or pale brown on the top and grayish-white or buff-white on the underside. In summer, the pelage is more reddish to gray-brown. The tail is black-tipped all the way around. Total length is 26 to 34 inches and weight is 17.5 to 23 pounds. Males are slightly larger than females. The Canada lynx differs from the bobcat in having paws that have twice the surface area, enabling them to forage in deep snow; a black-tipped tail whereas the bobcat's tail is black only on the top surface; a less spotted coat; and a tail shorter than one-half the length of the hind foot (BLM 2005b).

4.2.3. Habitat Requirements

Cool, moist coniferous forests with cold, snowy winters and abundant snowshoe hares define the required habitat of Canada lynx. Primary vegetation in Canada lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce. Secondary habitat includes cool, moist Douglas fir, grand fir, western larch, and aspen woodlands. In the western United States, 70 percent of Canada lynx occurrences were at elevations of 4,920 to 6,560 feet, but in Wyoming, the elevational range for all Canada lynx occurrences was 4,920 to 11,480 feet. Snow conditions in northern boreal forests are consistent, cold, and dry; in contrast, southern boreal forests have snow depths that are more variable and may be subjected to more freezing and thawing, causing crusting on the snow, which may reduce the competitive advantage that Canada lynx have in soft snow with their long legs and low foot loadings (BLM 2005b).

Canada lynx require a complex mosaic within their home range to meet different habitat needs. They prey on snowshoe hares in areas with high stem density and dense shrubby and coniferous growth with stems and branches that protrude above the snow, and they den in areas with large woody debris in the form of downed logs or root wads. Older and mixed-age forests with a patchwork of well-developed shrubs and young trees provide the dense understory and large downed logs required for both foraging and denning habitats. These forest types provide snowshoe hare habitat over a longer period and support red squirrel populations (BLM 2005b).

The primary prey is the snowshoe hare (*Lepus americanus*). In studies from Canada, Alaska, and Washington State, snowshoe hares comprised 35 to 97 percent of the diet. Alternative prey includes red squirrels (*Tamiasciurus hudsonicus*) and other squirrels (*Spermophilus* spp.), porcupine (*Erethizon dorsatum*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), mice and voles (*Peromyscus* spp. and *Microtus* spp.), shrews (*Sorex* spp.), fish, and deer (*Odocoileus* spp.) and moose (*Alces alces*), mostly as carrion. In Washington, the only state in the contiguous United States for which data are available, the annual diet was 79 percent hares, 24 percent tree squirrels, 3 percent ungulates, and 3 percent grouse. In northern populations red squirrels, voles, and other small mammals are a larger component of summer and fall diets compared with the winter diet focus on snowshoe hares (BLM 2005b).

Both foraging and denning habitats require large downed timber typically found in mature forests. This coarse woody debris provides protection from predators for vulnerable kittens and thermal cover.

Multiple natal dens are typically used. Females require nearby foraging habitat to feed their kittens (BLM 2005b).

4.2.4. Regional and Local Distribution

The Canada lynx lives in the boreal forests of North America from Alaska to Newfoundland, descending into the lower 48 states in northern New England (Maine, New Hampshire, New York, Vermont), the Western Great Lakes region (Michigan, Minnesota, Wisconsin), the Pacific Northwest (Oregon, Utah, Washington), and the Rocky Mountains (Colorado, Idaho, Montana, Wyoming).

Lynx have been present in Wyoming prehistorically and in historic times and the present. The best contiguous lynx habitat in Wyoming is in the northwestern portion of the state. The remainder is highly fragmented and widely dispersed, and typically separated by shrublands. The distribution of lynx specimens and reports in Wyoming indicate they occurred in the mountains of western and northern Wyoming, including the Salt River, Wyoming, Teton, northern Wind River, Gros Ventre, and Absaroka ranges; and they occurred in small numbers in the Uintah Range and the Bighorn Range, and sporadically in eastern Wyoming (BLM 2005b).

The Wyoming Natural Diversity Database (WYNDD) lists lynx as present in Fremont, Lincoln, Park, Sublette, Teton, Uinta, and possibly Big Horn counties. The Wyoming Game and Fish Department (WGFD) performed lynx surveys from November 1998 through April 1999. The effort focused on three areas – Dubois (Horse, Burroughs, Long, and Warm Springs drainages in the Wind River District of the Shoshone National Forest, Merna (Pass, Horse, Spring, Lead, Dry Beaver, South Beaver, Chall, and North Fork Middle Beaver drainages in the Big Piney District of the Bridger-Teton National Forest), and Cottonwood (North and South Cottonwood drainages in the Big Piney District of the Bridger-Teton National Forest). No lynx tracks were found in the Dubois area, one lynx track was found at Merna, and lynx tracks were found six times in the Cottonwood drainage. The WYNDD performed lynx surveys during the winters of 1999-2000 and 2000-2001. Two probable and three possible lynx trails were found during this survey. These observations occurred in three separate areas – Big Sandy, Pine Creek, and Water Canyon.

The recent reintroduction of lynx in Colorado has resulted in a number of collared animals taking residence in the Medicine Bow National Forest. One den was located, although the female died before kittens would have become independent. Because lynx can move great distances, it is likely that additional animals from Colorado will appear in Wyoming.

Two lynx were captured and outfitted with radio-telemetry collars in the Wyoming Range near Big Piney – a male in December 1996 and a female in March 1997. These animals were followed for 3 years. Home ranges of radio-collared lynx in Wyoming over the 3 years of the study were 72 miles and 65 miles for the male and female, respectively. Winter home ranges were 39 miles and 31 miles, and in the summers, they were 50 miles and 35 miles for the male and female, respectively. Daily travel distances were 1.3 miles to 2.5 miles. Exploratory movements of 18.6 miles were made.

More recently from 2001–2004, lynx were documented in Yellowstone park using snow tracking and hair-snare surveys (McKelvey et al. 1999, Murphy et al. 2006). Eleven detections, including three based on DNA evidence, were made in the central and east-central portion of the park. Lynx offspring were identified in 2003 and 2004 approximately 5 miles south of the East Entrance road. Cumulative detections represented at least three individuals, including two kittens born in two different years.

4.2.5. Threats

In determining threatened status for the contiguous United States DPS, the USFWS cited the inadequacy of existing regulatory mechanisms. The USFWS stated, "Current U.S. Forest Service Land and Resource Management Plans include programs, practices, and activities within the authority and jurisdiction of federal land management agencies that may threaten Canada lynx or Canada lynx habitat. The lack of protection for Canada lynx in these plans renders them inadequate to protect the species" (NatureServe 2009).

There appear to be some notable differences in Canada lynx ecology between southern and northern boreal forests. Snowshoe hare densities are lower and Canada lynx populations appear less stable and at higher risk in the south. The ecological differences between latitudes are likely due to use of alternative prey species; the effect of habitat patchiness on movements, reproduction, and survival; and the potential effects of different communities of predators and competitors. Persistence of Canada lynx in the contiguous United States appears to rely on dispersal from larger populations and maintenance of connectivity between northern and southern populations. For Canada lynx in Wyoming and Colorado, this translates to maintaining connectivity between populations in those two states, and between Canada lynx populations in Canada and Montana, and Montana and Wyoming.

Additional threats to Canada lynx include the following (NatureServe 2009):

- Lack of immigration from Canadian Canada lynx.
- Forest management activities that reduce habitat for snowshoe hares and/or red squirrels.
- Clearcuts, shelterwood cuts, seed tree cuts, and diameter-limit prescriptions that result in distance to cover greater than 325 feet (100 meters) may restrict Canada lynx movement and use patterns until forest regeneration occurs.
- Fragmentation, due to forestry, agriculture, and roads, and the subsequent isolation of suitable habitat is also a concern.
- Wildfire management in the west has resulted in forests that are more homogeneous and composed of shade-tolerant species with more canopy layers. Although multi-layered stands can provide excellent snowshoe hare habitat, fuel treatments and suppression of forest fires have resulted in ecological succession of forests and habitats that no longer support snowshoe hare and Canada lynx.
- Recreational trails created by snowmobiles and even cross-country skiers create packed snow conditions that allow other predators and competitors into what would otherwise be exclusive Canada lynx habitat.
- During denning in the spring, Canada lynx are more vulnerable and require more secure habitat and fewer disturbances than might be tolerated at other times of year. This type of vulnerability to human disturbance may also be exacerbated during periods when food is scarce.
- Increased winter recreation (snowmobiles, ski area development) may cause displacement and/or incidental mortality of Canada lynx.
- Habitat changes and increased access into Canada lynx habitats has resulted in increased competition and displacement of Canada lynx by bobcat and coyote in some areas.
- Roads into areas occupied by Canada lynx may pose a threat to Canada lynx from incidental harvest or poaching, increased access during winter for competing carnivores, especially coyotes, disturbance or mortality from vehicles, and loss of habitat.

- Extensive grazing by domestic livestock or wild ungulates may reduce forage and cover availability for snowshoe hares in aspen stands and high-elevation riparian willow communities.
- Development of oil wells can be harmful to Canada lynx, mostly as a consequence of new roads created to access areas for exploration and development. The result is increased human use and competing predator use. Mining may directly impact habitat and promote recreational activities as a consequence of new roads.
- Road construction causes habitat fragmentation and allows increased human access into Canada lynx habitat; this may increase Canada lynx mortality by facilitating access for hunters and trappers, and incidental harvest of Canada lynx in the course of legal trapping/hunting for other species may be a problem in some areas.

4.3. Gray Wolf

4.3.1. Status

The gray wolf was listed as endangered under the ESA in 1974 in the conterminous 48 states. The Wyoming BLM completed the *Final Statewide Programmatic Gray Wolf Biological Assessment* in September 2004 (BLM 2004a). Consideration of effects and conservation measures identified in the assessment are included in this BA where appropriate. Unless otherwise referenced, the species information in this report came from the *Final Statewide Programmatic Biological Assessment for Gray Wolf*.

The USFWS listed the eastern timber wolf subspecies (*C. l. lycaon*) as endangered in Minnesota and Michigan, and the northern Rocky Mountain wolf subspecies (*C. l. irremotus*) as endangered in Montana and Wyoming. The USFWS listed a third subspecies, the Mexican wolf as endangered (*C. l. baileyi*) in 1976. In 1978, the USFWS published a rule that relisted the gray wolf at the species level (*C. lupus*) as endangered throughout the lower 48 states and in Mexico. A wolf recovery team for the Northern Rocky Mountain region was appointed in 1974 and a Recovery Plan was approved in 1987.

In 1995 and 1996 the USFWS reintroduced 66 wolves from Alberta and British Columbia into the wilderness areas of central Idaho and Yellowstone National Park (YNP) as nonessential, experimental populations (59 FR 60252) under ESA Section 10(j) with the goal of reestablishing a sustainable gray wolf population in the northern Rocky Mountain states, including Wyoming, Idaho and Montana. At the end of 2002, there were 663 wolves, including 43 breeding pairs – 284 individuals in the Central Idaho Recovery Area, 271 in the Greater Yellowstone Recovery Area, and 108 in the Northwest Montana Recovery Area. Year 2002 was the third year in which there were 30 or more breeding pairs documented in the recovery area.

The USFWS determined that the reintroduced wolves in the Northern Rocky Mountain region would comprise an experimental, nonessential population. At the same time, the USFWS established a rule under ESA Section 4(d) that gives the USFWS flexibility in responding to wolf-human conflicts outside the experimental population areas. The 4(d) rule allows landowners and permittees who have federal grazing allotments to non-injuriously harass wolves without a permit, injuriously harass wolves with a permit, or kill a wolf that is in the act of either attacking livestock or herding an animal.

The USFWS defined a recovered wolf population in the northern Rocky Mountain Recovery Area as one that contains at least 30 breeding pairs of wolves (an adult male and female raising two or more pups-of-the-year until December 31), with an equitable and uniform distribution throughout the three states for 3 consecutive years. The USFWS found that 2002 was the third year in which at least 30 breeding

pairs of wolves inhabited the Northern Rocky Mountain Recovery Area and the population of 663 wolves had achieved biological recovery objectives. If the wolf population remains at least at current levels and distribution, and state management plans are developed, the USFWS may publish its proposal to delist gray wolves in the northwestern United States.

On April 1, 2003, the USFWS identified three DPS of gray wolves in the lower 48 states – Eastern DPS, Western DPS, and the Southwestern DPS. To qualify as a DPS, a group of vertebrates must satisfy criteria of both discreteness and significance. The USFWS found that each of these segments comprised a group of wolves geographically separated from the other groups – they are "discrete" and each of these groups demonstrates unique evolutionary lineages and the loss of any one would result in a substantial range gap – they are "significant." The USFWS concluded that these three DPSs represent separate "reservoirs of diversity" and thus warrant reclassification reflecting this uniqueness.

The Western DPS completely encompasses California, Idaho, Montana, Nevada, Oregon, Washington, Wyoming, and Utah north of U.S. Highway 50, and Colorado north of Interstate 70. Wolves that are part of an experimental population are not included in the DPS. When the USFWS established the nonessential, experimental populations in the Northern Rocky Mountain area, the rule stated that this status would not be changed until the wolf populations were delisted. Thus, there are two classifications based on geography in the Northern Rocky Mountain area – the Western DPS and the nonessential, experimental populations. With downlisting, all of the wolves in the Northern Rocky Mountain area are managed under almost identical rules, the 4(d) rule applied to the Western DPS and the regulations applying to the experimental population.

The rule reclassifying gray wolves into three DPSs also downlists wolves in the Eastern and Western DPSs from endangered to threatened, except where they were already listed as threatened or as an experimental population. Wolves in the Southwestern DPS retained their endangered status. At the same time, the USFWS established a rule under ESA section 4(d) that applies to wolves listed as threatened in the Western DPS.

Wolves are currently listed in Wyoming as predatory animals and may be taken any time of year without limit. However, because of their status under the ESA, wolves are not currently managed pursuant to Wyoming statute and regulations. The WYNDD has assigned the gray wolf the rank of G4/S1, meaning it is critically imperiled (WYNDD 2010). Wolves in Wyoming are currently managed primarily by the USFWS, the National Park Service, and United States Department of Agriculture (USDA) Wildlife Services.

Wyoming published a Final Management Plan in preparation for satisfying the requirements of the Northern Rocky Mountain Recovery Plan for delisting. The plan established a dual status for gray wolves in Wyoming of "trophy game animal" and "predatory animal," depending on the location of the pack or individual. If there are 15 packs in Wyoming (8 packs in YNP, Grand Teton National Park, and John D. Rockefeller, Jr. Memorial Parkway, and 7 packs in the rest of Wyoming), then wolves would be trophy game animals within YNP and Grand Teton National Park, the John D. Rockefeller, Jr., Memorial Parkway, and contiguous wilderness areas (Absaroka-Beartooth, North Absaroka, Washakie, Teton, Jedediah Smith, Winegar Hole, and Gros Ventre). Wolves outside these areas will be classified as predatory animals. However, the USFWS rejected the delisting petition in January 2004 due to the inadequacy of Wyoming's plan to protect wolves.

On February 8, 2007, the USFWS published a proposed rule to establish a DPS of the gray wolf in the Northern Rocky Mountain region of the United States and to remove the gray wolf in the Northern Rocky Mountain DPS from the List of Endangered and Threatened Wildlife under the Endangered Species Act of 1973 [Federal Register: April 2, 2009 (Volume 74, Number 62) Rules and Regulations Page 15123-15188].

In 2009, the USFWS announced a *Final Rule to Identify the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment* and to revise the List of Endangered and Threatened Wildlife [Federal Register: April 2, 2009 (Volume 74, Number 62) Rules and Regulations Page 15123-15188]. The population estimate for 2008 indicates the Northern Rocky Mountain DPS contains approximately 1,639 wolves (491 in Montana, 846 in Idaho, 302 in Wyoming) in 95 breeding pairs (34 in Montana, 39 in Idaho, 22 in Wyoming). These numbers are about five times higher than the minimum population recovery goal and three times higher than the minimum breeding pair recovery goal. The end of 2008 will mark the ninth consecutive year the population has exceeded USFWS numeric and distributional recovery goals [Federal Register: April 2, 2009 (Volume 74, Number 62) Rules and Regulations Page 15123-15188].

In August 2012, the USFWS announced that the Wyoming population was recovered and no longer warranted protection under the ESA [Federal Register: September 10, 2012 (Volume 77, Number 175) Rules and Regulations Page 55530-55604]. Beginning September 30, 2012, wolves in Wyoming were managed by the state under an approved management plan.

On September 23, 2014, the Federal District Court for the District of Columbia vacated the 2012 delisting of the gray wolf in Wyoming under the ESA. The USFWS is currently in the process of evaluating this decision; however, the decision reinstates the federal protections that were in place prior to the 2012 delisting. Therefore, wolves are again listed as a nonessential, experimental population in all of Wyoming.

4.3.2. Life History

The gray wolf is the largest of the wild canids. It has a long bushy tail and erect, slightly rounded ears. Its legs are longer, feet larger, and chest narrower than a dog of similar size. The wolf has long, thick, coarse fur that is typically grizzled gray but can vary from black through white. The most common pelt colors in the northern Rocky Mountains are grizzled gray and black. Average height at the shoulders is 26 to 32 inches; total length (nose to tip of tail) is 4.2 to 5 feet, with some individuals approaching 6 feet; and weight ranges from 79 to 90 pounds for females and 90 to 110 pounds for males.

Wolves are opportunistic predators that feed primarily on ungulates, although they will also take beavers and other small mammals. In YNP and adjacent areas, elk have been the primary ungulate taken (more than 85% of documented kills have been elk), followed by bison (2% of kills), deer (2%), moose (less than 0.5%), and pronghorn (less than 0.5%). Most elk killed in Greater Yellowstone Area (GYA) were calves, adult females, or individuals with low marrow fat and the adults killed were older than the mean age, by sex, within the general elk population. In Riding Mountain National Park, Canada, elk were the main food base. The kill rate per wolf was one elk per 14 days. The kill success rate varies seasonally. In the GYA from November 15 to December 15, when elk are in good condition, the kill rate is lower than during March, when elk are in poor condition.

4.3.3. Habitat Requirements

Wolves are habitat generalists and historically occupied most habitats in the Northern Hemisphere including all of Wyoming, and populations flourished in areas with plentiful large prey. The presence of abundant prey, which in Wyoming is elk, and relatively low levels of human activity are the main habitat requirements for wolves.

In the Bow River Valley in Alberta, Canada, use of habitat types was related to human use levels and habitat potential. Alienation of wolves occurred when more than 10,000 people per month used an area, regardless of habitat quality. Wolf use patterns were altered at lower human use levels as well.

In the Central Rocky Mountains of Canada, wolves were affected by topographic complexity and elevation. Wolves converged in broad river valleys in winter, where movement was less restricted by snow and elk converged. Human activities associated with highways, roads, and other linear corridors cause fragmentation of wolf ranges and result in the death of wolves. Persistent occupancy of wolves is usually ensured at road densities below approximately 0.4 mile. Road density is the measurable manifestation of human activity and the mortality of wolves is caused by the humans using the roads, rather than road density. Roads with low use can provide travel corridors for wolves. Wolves also appear to avoid snowmobile activity.

Wolves do not tolerate human activity near dens and pups, although researchers have been able to make observations without disturbing the animals. Disturbance can cause desertion of home sites. Dens within 1.5 miles of roads or campgrounds were used by wolves and wolves may be adapting to human activity and disturbances. The first wolf den found in recent years consisted of five den openings on a flat, forested knoll adjacent to a meadow. The den openings were hidden in Engelmann spruce, Douglas-fir, and lodgepole pines; the meadow was thought to be used as a rendezvous site. Dens in northwest Montana and the Canadian Rockies are typically located in valley bottoms and lower slopes, with flat to moderate slopes, on south and east aspects, on depositional landforms, at sites close to trails, far from human habitation and activity, and close to meadows and other openings. Dens are frequently used repeatedly and thus den sites represent an important habitat element for wolves.

4.3.4. Regional and Local Distribution

As recently as the mid-19th Century gray wolves existed throughout most of North America, exclusive of the Gulf Coast region where the red wolf (*Canis rufus*) was found. Wolves were present throughout the northern Rocky Mountain region before colonization by Europeans, which resulted in reduction of native ungulate populations, introduction of livestock, and persecution of wolves. By the 1940s, wolves persisted only in isolated locations in the United States. In the late 1970s, wolves were dispersing into the mountainous areas near Glacier-Waterton Lakes National Parks in Alberta, Canada, just across the border. In 1985, a pack of 12 wolves crossed the border from Alberta to Glacier National Park. Breeding was documented in 1986, for the first time in 50 years in the United States, and by 1992 at least 50 individuals were known to reside in at least 4 packs along the continental divide of Montana. Wolves were documented from Idaho since the early 1980s. Before reintroduction, lone wolves have ventured into the GYA on a number of occasions, and a single wolf was documented in northwestern Wyoming in 1992.

After many years of effort and planning, wolves were reintroduced into the GYA in 1995 and 1996. This effort targeted large tracts of federal public lands (YNP and the surrounding National Forest) that supported large populations of wild ungulates and had a relatively low likelihood for wolf-human conflicts. Today wolves are found in the northwestern portion of Wyoming, largely in the GYA. There are 14 packs in YNP and 7 that spend most of their time in Wyoming. Numerous sightings of wolves suggest that they roam over much of western Wyoming. The known distributional extent of these wandering wolves is the Big Horn Mountains and Ten Sleep to the east, Morgan, Utah (outside Ogden), to the south, and into Idaho to the west. Wolves have been sighted southwest of Meeteetse and around Worland and Thermopolis. Wolves are also routinely seen around Kemmerer, Cokeville, and Lander, and have shown up east of Rock Springs. In these southern portions of the Red Desert, the wild

prey density is very low and cattle and sheep density is higher; the wolves switch to the available prey and conflicts result.

The Wyoming Wolf Recovery Annual Report, released in 2009, shows that more than 320 gray wolves (*Canis lupus*) in more than 44 packs (more than 27 breeding pairs) inhabited Wyoming, including YNP. The wolf population increased statewide by approximately 6 percent, making 2009 the seventh consecutive year that the wolf population in Wyoming has exceeded the numerical, distributional, and temporal recovery goals established by the USFWS. The wolf population in Wyoming (outside YNP) increased by approximately 26 percent, consisting of more than 224 wolves in more than 30 packs, of which more than 21 breeding pairs produced more than 89 pups that survived through December 31, 2009. Average pack size was 7 wolves per pack and average litter size was 4.1 pups per litter. Wolf numbers in YNP declined by approximately 23 percent, with 96 wolves living in 14 packs, of which 6 breeding pairs produced 23 pups that survived through the end of the year. Average pack size in YNP was 7.1 wolves per pack (Jimenez et al. 2010).

4.3.5. Threats

Human-caused mortality, including legal and illegal harvest, depredation control, and vehicle collisions, is the largest cause of mortality and is the only source of mortality that can extensively affect wolf populations at recovery levels. In the GYA, of 20 documented wolf mortalities in 2000, nine were human-caused (six control actions, two vehicle collisions, and one illegal take), six resulted from natural causes, and five were of unknown cause. Researchers have found that if annual mortality exceeds 30 to 40 percent, population growth of wolves may be suppressed. The response of wolves to humans is variable, as can be expected in a long-lived animal with a large degree of social transmission. Wolves are sensitive to human predation and harassment, which influence the distribution and survival of wolves. However, human-caused mortality is consistently noted as the problem.

In unexploited populations, annual mortality is 45 percent for yearlings and 10 percent for adults. Intraspecific conflict between neighboring packs, starvation, disease, and injury are the primary causes of mortality. However, natural mortality does not regulate populations in the northern Rockies.

Flexible food habits, high annual productivity, and dispersal capabilities enable wolves to respond to natural and human-induced disturbances. These traits confer a high degree of resiliency on wolves. Wolf distribution will ultimately be defined by the interaction of wolves' ecological requirements and human tolerance, not by artificial delineations that are administratively determined. In short, ungulate abundance and distribution and human settlement patterns will define wolf habitat. Loss of habitat is a trend to be expected as human populations increase and more development occurs. The network of public lands in western Montana, central Idaho, and northwest Wyoming facilitates connectivity between the three sub-populations and the public lands in the rest of the Rocky Mountain west will provide dispersal routes. Wolf populations will fluctuate as a result of management actions, natural mortality, legal harvest, illegal take, wolf productivity, and ungulate population fluctuations.

Other important factors are stochastic – fire, weather (drought and/or hard winters), and disease. These unpredictable and often uncontrollable factors can create unforeseen circumstances and results on recovering wolf populations. The Yellowstone fires of 1988 took out old growth, which caused a decline in the moose population. The hard winter of 1996-1997 caused a decline in the elk populations, as has the current drought.

Disease can present a surprising vulnerability. The introduction in the early 1980s of a human-introduced canine parvovirus to the wolves at Isle Royale caused a crash in the wolf population from 50 to 14 animals in a period of 2 years. The transmission of disease from domestic dogs (e.g., parvovirus),

is a conservation concern. Sarcoptic mange is an epizootic of concern, and some researchers suggest that it could be a regulating factor in canid populations. Viral infections of concern are distemper and canine hepatitis.

4.4. Grizzly Bear

4.4.1. Status

In 1975, the USFWS listed the grizzly bear as threatened in the lower 48 states under the ESA. The Wyoming BLM completed the *Final Statewide Programmatic Grizzly Bear (Ursus arctos) Biological Assessment* in 2005 and updated it in 2006 (BLM 2006). Consideration of effects and conservation measures identified in the statewide BA are included in this document where appropriate. Unless otherwise referenced, the species information in this report came from the statewide BA for grizzly bear (BLM 2006).

The Grizzly Bear Recovery Plan (USFWS 1993) outlines the conditions required for grizzly bears to reach recovery, and establishes several demographic (population) recovery targets that must be achieved for a recovered grizzly bear population. Recovery targets are currently being met. The Interagency Grizzly Bear Committee produced a *Final Conservation Strategy for the Grizzly Bear in the Yellowstone Ecosystem* (ICST 2003) that defines the Primary Conservation Area (PCA) and outlines a cooperative management strategy to be implemented by state and federal agencies upon delisting of this population of grizzly bears; this plan is a necessary precursor to delisting. The PCA encompasses 9,200 square miles in southeast Idaho, southwest Montana, and northwest Wyoming. The National Park Service and the USDA Forest Service manage most of lands in the PCA.

The Wyoming Game and Fish Commission adopted the Wyoming Grizzly Bear Management Plan on February 22, 2002. It is in consensus with the Conservation Strategy, and provides management plans for areas outside the PCA to ensure the long-term viability of grizzly bears and preclude re-listing; support expansion of grizzly bears beyond the PCA, in areas that are biologically suitable and socially acceptable; and manage grizzly bears as a trophy game animal – including allowing regulated hunting when and where appropriate. Subsequently, and in response to concerns by segments of the public that the original plan included extensive amounts of private property where social tolerance for bear occupancy is low, an addendum management proposal was issued, which would be appended to the Wyoming Management Plan and the Conservation Strategy.

On March 29, 2007, the USFWS delisted the Yellowstone distinct population segment of the grizzly bear due to robust population growth, state and federal cooperation to manage mortality and habitat, public support for recovery, and the development of adequate regulatory mechanisms (72 FR 14865). Following the delisting, three lawsuits challenging the decision were filed in federal courts in Boise, Idaho and Missoula, Montana. On March 26, 2010, the USFWS reinstated the regulatory protections for the grizzly bear as a threatened species in the Greater Yellowstone Area and surrounding area to comply with a court order (75 FR 30617).

4.4.2. Life History

The grizzly bear is large and powerful, with a massive head, prominent nose, small rounded ears, small eyes, and short tail. The species is recognized in the field by its dished facial profile; prominent shoulder hump; and long, slender, slightly recurved foreclaws twice the length of the hind claws. Dorsal guard hairs of some individuals from western North America are variegated and show a silver tipped or

grizzled appearance, hence the name grizzly. In North America, pelage color varies from nearly yellow to black and may be any shade of brown.

Grizzly bears in the GYA utilize a variety of foods, including whitebark pine seeds, army cutworm moths, ants, earthworms, rodents, spawning cutthroat trout (*Oncorhynchus clarki*), ungulates (winter-killed or weakened animals, young in the spring and summer, bull elk weakened by the rut in the fall, and wolf kills), gut piles of hunter killed elk and moose, fungal sporocarps, horsetails (*Equisetum arvense*), graminoids, forbs, berries, roots (especially roots of the biscuitroot) and anthropogenic foods such as garbage, pet food, and livestock. Of these items, ungulates and whitebark pine seeds appear to be the two most important foods for Yellowstone grizzly bears, followed by army cutworm moths and spawning cutthroat trout (BLM 2006).

The grizzly bear diet varies seasonally and yearly depending on the availability of high-quality foods. When preferred foods are not available, grizzly bears will shift to eating lower-quality foods. For instance, grizzly bears consume ants more heavily during years when known high-quality foods are scarce. Ants generally are not an important source of energy for Yellowstone grizzly bears (averaging less than 5% of fecal volume at peak consumption), but are likely to become a more important food as currently important foods decline because of disease and regional climate warming. Army cutworm moths are also an important food item for some grizzly bears during July and August (BLM 2006).

4.4.3. Habitat Requirements

Grizzly bears occupy a variety of habitats throughout their range. They are highly adaptable and are capable of exploiting different landscapes given their omnivorous generalist lifestyle and intelligence. This indication is further reinforced by the wide range of habitats utilized by any one population.

Occupied grizzly bear habitat in the lower 48 states is characterized by extensive forest cover often interspersed with grasslands and meadows; in Wyoming these habitats are generally above 4,921 feet. Although grizzly bears do not intrinsically require such cover, populations living near developed areas may require the isolation provided by forest cover. Home ranges must encompass a complex of habitat types because the animals move among these habitats seasonally to take advantage of various food items as they become available. In addition, home ranges must include sites suitable for hibernation. Denning sites are most commonly located in the subalpine fir stands on north-facing exposures.

The general pattern of seasonal habitat use in YNP followed plant phenology. Before the growing season, grizzly bears congregate on ruminant wintering grounds. As succulent herbaceous material becomes available, bears concentrate activity at feeding sites in open areas near cover. After the growing season, bears move to moist sites where succulent grasses and forbs remain available. As valley vegetation desiccates, bears move to the lodgepole pine forests to exploit late season foods such as whitebark pine seeds, berries, mushrooms (*Russula* spp.), and smilacina rhizomes.

Yellowstone grizzly bear habitat is characterized by sporadic and widely fluctuating food production primarily controlled by weather. As a result, the natural carrying capacity of the overall habitat fluctuates. During years of low productivity, bears compensate by using a larger area. Mortality is also higher during these periods and fecundity decreases.

Foraging areas for grizzly bears are comprised of a mosaic landscape containing the different seasonal foods. These areas include elk wintering grounds, calving areas, tributaries of Yellowstone Lake for trout, and whitebark pine forests inhabited by red squirrels. Lush meadows with sedges and equisetum, and areas of shrubs for berries are important. For ants, grizzly bears tend to select large ants nested in logs, mostly at low elevations or on southerly aspects where there are abundant, large-diameter, well-

decomposed woody debris under an open forest canopy. Grizzly bears feeding on army cutworm moths in the Shoshone National Forest are most often observed feeding on aggregated moths at elevations above 3,350 meters (approximately 11,000 feet) on or near alpine talus with slopes greater than 30 degrees and south and west facing aspects.

In North America, grizzly bear dens may be located in treeless alpine areas, the forest-alpine ecotone, or forest, depending on availability. Grizzly bears select den sites with stable snow conditions for the duration of time required. The typical den documented for grizzly bears in North America is excavated under trees where root systems provide stability for the roof. Grizzly bears likely use the most suitable denning habitat within their home range, but local tradition may play a role in site selection and den construction. The most frequently used denning habitat in the GYA is in subalpine fir forest.

Grizzly bears engage in five kinds of movements – movement to an abundant or preferred food source, localized movement, intensive feeding prior to denning, movement to a den site, and natal dispersal. Movement and activity patterns are influenced by a number of factors, including weather, key food items, breeding, reproductive status, security, and human disturbance, and therefore can be variable within and among populations of grizzly bears.

In the Bighorn Basin Planning Area grizzly bears use habitats along the Absaroka Front and within the Owl Creek and Castle Rocks areas at the southeast end of the Absaroka Mountains. These areas are distinguished by high (elevation of 9,000 to 10,900 feet) alpine tundra with windswept slopes and mountainous cliffs scattered with erratic dense patches of conifer, and aspen. The bare rocky soil along lower draws and ridges and sagebrush grasslands along wide creek bottoms enhance this mountain transition area.

4.4.4. Regional and Local Distribution

The range of grizzly bears in North America before European settlement extended south from Alaska to northern Mexico and east from the Pacific coast to the Canadian Prairies and U.S. Great Plains west of the Mississippi River. Historically, grizzly bears occurred throughout most of Wyoming. Grizzly bear populations have been eliminated from more than 98 percent of their historic range in the lower 48 states and their distribution is patchy and fragmented. Only five remnant populations remain below the Canadian border – the Cabinet-Yaak population in extreme northwest Montana and northeast Idaho; the Selkirk population in extreme northwest Idaho and extreme northeast Washington; the northern Cascades population in Washington; the Northern Continental Divide Ecosystem population in north-central Montana; and the GYA population in eastern Idaho, southwestern Montana, and northwestern Wyoming. In Wyoming and elsewhere, the grizzly bear has expanded its range in the past two decades and has reoccupied historic habitats. Current range expansion of the GYA population is particularly evident in the southern portion of the ecosystem in Wyoming.

The PCA of the Yellowstone grizzly bear encompasses 14,809 square miles centered on YNP and includes Grand Teton National Park; John D. Rockefeller Memorial Parkway; contiguous portions of the Shoshone, Bridger-Teton, Targhee, Gallatin, Beaverhead, and Custer National Forests; and more than 138 square miles of state and private lands in southeast Idaho, southwest Montana, and northwest Wyoming.

The general current extent of the grizzly bear's range in Wyoming includes Grand Teton National Park; YNP, and portions of adjacent national forest and private lands to the south and east extending to the eastern edge of the Absaroka Mountains; along the Absaroka Front; the western portion of the Owl Creek Mountains; the Gros Ventre Range to the Pinnacle Peak area; the Wind River Range to the Green

River Lakes area; and portions of the Wyoming Range located in west-central Wyoming. Along the Absaroka Front there has been an expansion of grizzly bear range, primarily in spring and fall, due to increased federal protection and resultant increases of populations looking for suitable new territories, and in some cases forage shortages (pine nuts, moths, Yellowstone cutthroat trout, and berries) during drought years and competition with other bears.

4.4.5. Threats

The key reasons for decline of grizzly bears in North America are human-caused mortality and habitat loss. Stochastic environmental events also pose extensive threats to long-term persistence of small isolated populations and are therefore real threats to persistence of the grizzly bear population in Wyoming. A stochastic environmental event can impact a population of grizzly bears via direct mortality of bears or indirectly by impacting important food sources and carrying capacity. Researchers are concerned about impacts of future climate change on two very important foods – seeds of whitebark pine and aggregated army cutworm moths. These two species occur at high elevations and are therefore susceptible to climate warming. Worst-case scenarios predict elimination of these food sources in the GYA.

Large-area requirements, low reproductive potential, and sensitivity to human disturbance contribute to intrinsic vulnerability in this species. Throughout their range, documented human disturbances include helicopter and fixed-wing aircraft flying overhead, hydrocarbon exploration and development, hydroelectric development, timber extraction, recreational activities, and roads and highways. These disturbances may result in displacement and/or disruption of normal behavior patterns such as copulation, movement, denning, foraging, physiological arousal without overt behavioral response, and even direct loss of habitat via avoidance. However, many of these disturbances are not factors for the GYA population of grizzly bears because they do not occur there.

Disturbances associated with roads and developments can displace grizzly bears from quality habitats; however, there is individual variation in road avoidance. Sensitive to disturbances associated with roads and developments, grizzly bears avoid areas within 1.86 miles of developments and within 2.5 miles of roads. Displacement from quality habitats in these areas may prevent dispersal, force bears to use poorer-quality sites, increase intraspecific competition, and may cause social disruption in areas away from developments and roads. Road avoidance may result in higher mortality and lower fecundity of displaced individuals.

4.5. North American Wolverine

4.5.1. Status

On October 21, 2003, the USFWS published a 90-day finding that the petition to list the North American wolverine in the contiguous United States did not present substantial scientific and commercial information indicating that listing as threatened or endangered may be warranted (68 FR 60112-60115). Sufficient information was not available at that time to determine whether the contiguous United States population constituted a DPS (or other listable entity). In September 2006, the U.S. District Court, Montana District, ruled that the 90-day petition finding was in error and ordered the USFWS to make a 12-month finding for the wolverine.

On March 11, 2008, the USFWS published a 12-month finding on a petition to list the North American wolverine as an endangered or threatened species under the ESA (73 FR 12929-12941). In that finding,

the wolverine in the contiguous United States did not constitute a DPS. Therefore, the USFWS did not list the North American wolverine under the ESA. On September 30, 2008, Defenders of Wildlife et al. filed a complaint challenging the 12-month finding based on the application of DPS Policy and the ESA. On April 15, 2010, the USFWS published a notice initiating a status review for the North American wolverine in the contiguous United States (75 FR 19591-19592).

On December 14, 2010, the USFWS published another 12-month finding on the petition to list the North American wolverine as an endangered or threatened species under the ESA (75 FR 78030-78061). In that finding, the USFWS determined the North American wolverine constituted a DPS and warranted an addition to the *Lists of Endangered and Threatened Wildlife and Plants*. However, the listing was precluded by higher priority actions and the contiguous DPS was added to the candidate species list.

On February 4, 2013, the USFWS instituted a proposed rule to list the DPS of the North American wolverine occurring in the contiguous United States as a threatened species under the ESA (78 FR 7863-7890). The USFWS issued a 6-month extension of the final determination for the proposed threatened listing of the North American wolverine DPS on February 5, 2014. This extension was the result of substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the proposed listing. The USFWS anticipates publishing a final listing determination on or before August 4, 2014.

4.5.2. Life History

The wolverine is one of the least-studied carnivores in North America, particularly for populations in the southern extent of its range (Ruggiero et al. 2007). The wolverine is the largest terrestrial member of the weasel family (Mustelidae) and generally weighs between 17 and 40 pounds. This species is characterized by a bushy tail; broad, rounded head; short, rounded ears; and small eyes.

Wolverines have an excellent sense of smell, which enables them to locate food beneath deep snow. They are opportunistic feeders and their diet consists of a variety of foods, depending on availability. The wolverine primarily scavenges carrion, but also preys on small animals and birds, fruits, berries, and insects (USFWS 2014).

Breeding generally occurs from late spring to early fall and females undergo delayed implantation until the following winter to spring, when active gestation lasts from 30 to 40 days (USFWS 2014). Litters are born between February and April, containing one to five kits, with two to three kits being the most common number. Female wolverines use natal (birthing) dens that are excavated in deep snow. Female wolverines go to great lengths to find secure den sites, suggesting that predation is a concern (USFWS 2014).

4.5.3. Habitat Requirements

Wolverines do not specialize on specific vegetation types or geological habitat aspects. Instead, this species selects areas that are cold and receive enough winter precipitation to maintain deep and persistent snow late into spring. The requirement of cold, snowy conditions means that, in the southern portion of the species' range where ambient temperatures are warmest, wolverine distribution is restricted to high elevations (at least 6,000 feet and preferably above 9,500 feet). Wolverines are present at lower elevations in more northern latitudes and even at sea level in the far north. Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States (USFWS 2014). These environments become increasingly

fragmented at southern latitudes and species persistence becomes critically dependent on dispersal between habitat islands (Ruggiero et al. 2007).

4.5.4. Regional and Local Distribution

The historic range of North American wolverines extended south from the arctic islands to the mountains of Colorado and Utah, as well as parts of the north-central and northeastern U.S., exclusive of California, Oregon, Washington, and part of Southern British Columbia. North American wolverines were nearly extirpated from the contiguous United States in the early 20th century due to broad-scale predator trapping and poisoning and the areas in which wolverines occur have contracted compared to the historical range of the wolverine in the contiguous United States (Ruggiero et al. 2007).

Today, wolverines occur in the contiguous United States primarily in tundra, boreal forests, and subalpine environments within a limited range from north-central Washington, northern and central Idaho, western Montana, and northwestern Wyoming (Ruggiero et al. 2001). Wolverines in the Greater Yellowstone area are known to select elevations at and above tree-line during summer, shifting to slightly lower elevations centered at tree-line during winter (Inman et al. 2012). Although wolverines shift to lower elevations in winter, they tend to avoid areas with a lack of tree or talus escape cover, even if densities of elk and scavenging opportunities are greater (Inman et al. 2012).

The delineation of current habitats is difficult because wolverines tend to live in remote locations, occurring at naturally low densities. As such, wolverine occurrence in the Planning Area is unknown. The USFWS consultation range of the North American wolverine overlaps 35,899 acres of the Planning Area, 15,517 acres of which occur on BLM-administered lands. This species could be found in boreal forests and/or alpine habitats along the western edge of the Bighorn Basin where there are limited BLM-administered lands with elevations above 9,500 feet in the Absaroka and Owl Creek mountain ranges. Approximately 7,826 acres of BLM-administered lands overlapping the USFWS consultation range for the wolverine are at or above 9,500-feet elevation. This area represents the most suitable habitat for the North American wolverine within the Planning Area.

4.5.5. Threats

The wolverine is one of the least-studied carnivores in North America, particularly for populations in the southern extent of its range (Ruggiero et al. 2007). The USFWS identifies habitat and range loss due to climate change as the primary threat to the North American wolverine (USFWS 2014). Wolverines need deep persistent snow cover for successful denning, and they concentrate their year-round activities in areas that maintain deep snow into spring and cool temperatures throughout summer. Climate changes are predicted to reduce wolverine habitat and range by 23 percent over the next 30 years and 63 percent over the next 75 years, rendering remaining wolverine habitat significantly smaller and more fragmented (USFWS 2014). By 2045, maintenance of the contiguous United States wolverine population in the currently occupied area will likely require human intervention to facilitate genetic exchange and facilitate metapopulation dynamics by moving individuals between habitat patches that are no longer accessed regularly by dispersers (USFWS 2014).

Other threats to wolverines include trapping (harvesting); inadequate regulatory mechanisms to protect against human recreational disturbance, infrastructure developments, and transportation corridors; and variability in population growth rates arising from random differences among individuals in survival and reproduction and loss of genetic diversity due to small effective population sizes (USFWS 2014). Among these human activities, harvesting in southern boreal forests is thought to have the greatest potential to

cause populations to become dangerously small or locally extirpated (Ruggiero et al. 2001). Threats from the abovementioned human activities could become significant when working in concert with climate change if they further suppress an already stressed population.

4.6. Ute Ladies'-tresses

4.6.1. Status

On January 17, 1992, the USFWS listed the Ute ladies'-tresses (*Spiranthes diluvialis*) as threatened in the lower 48 states under the ESA. The Wyoming BLM completed the *Final Statewide Programmatic Biological Assessment Ute Ladies'-tresses* in 2005 with final edits in 2007 (BLM 2007c). Consideration of effects and conservation measures identified in the assessment are included in this BA where appropriate. Unless otherwise referenced, the species information in this report came from the statewide BA (BLM 2007c).

The Natural Heritage rank is G2 and S1, meaning that the species is imperiled because of rarity on the global level (often known from 6 to 20 locations) and critically imperiled because of extreme rarity on the state level (known from 5 or fewer occurrences). The WYNDD lists the Ute ladies'-tresses as sparse and a High Conservation Priority.

Nine populations of the Ute ladies'-tresses occur in Wyoming at eight sites in Goshen, Laramie, Converse, and Niobrara counties. Three of these, the Converse County populations, are on BLM-administered land in the Casper Field Office Planning Area. The population in Goshen County is on state land, and the other five populations are on state or private land. The populations that are not on BLM-administered land do not have any mineral estate under them.

Although the remaining seven Field Office management areas have been inventoried to various amounts, presence of Ute ladies'-tresses has not been confirmed on BLM-administered land or non-federal lands in these areas. However, Ute ladies'-tresses has been found on non-federal surface lands in the Newcastle and Rawlins Field Office areas. As further surveys are conducted, previous and current factors affecting areas with Ute ladies'-tresses will be addressed on a case-by-case basis.

4.6.2. Life History

Ute ladies'-tresses is a perennial plant with stems 8 to 19 inches tall, arising from tuberous-thickened roots. Basal leaves are linear, up to 0.4 inches wide and 11 inches long. Leaves are small in size and number higher up the stem. The species is characterized by a flowering stalk 1.2 to 5.9 inches long with numerous small, ivory white flowers arranged in a helix at the top of the stem. The lip petal is oval to lance-shaped, narrowed at the middle, and has wavy margins. Sepals are separate or fused only at the base and often spread at their tips. In general, Ute ladies'-tresses blooms from late July to early September; however, it does not necessarily flower every year. The peak of flowering occurs in Wyoming around the August 10, but depends on temperature and moisture. It reproduces by seed only.

4.6.3. Habitat Requirements

Ute ladies'-tresses is an endemic species that occurs primarily in seasonally moist peat, sand, silt, or gravel soils near wet meadows, springs, lakes, ponds, or perennial streams. Ute ladies'-tresses establishes in open grass- and forb-dominated riparian areas that are not particularly dense or

overgrown. Ute ladies'-tresses seems generally intolerant of shade, although a few populations in eastern Utah and Colorado occur in riparian woodlands. Most populations occur as small, scattered groups occupying relatively small areas within the riparian system. Populations occur in mesic or wet meadows near riparian edges, gravel bars, and old oxbows along perennial streams at elevations ranging from 4,000 to 7,000 feet. Most sites are sub-irrigated and seasonally flooded, remaining moist into the summer.

Ute ladies'-tresses is well-adapted to periodic disturbances from stream movement and grazing. It is known to establish in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms.

4.6.4. Regional and Local Distribution

Populations of Ute ladies'-tresses occur in southeastern Wyoming, western Nebraska, north central Colorado, northeastern and southern Utah, east central Idaho, southwestern Montana, and central Washington. Ute ladies'-tresses is currently known from eight sites in eastern Wyoming, including a small population along a tributary to Antelope Creek (a tributary to the Cheyenne River); a population along North Wind Creek, a tributary to Antelope Creek; a population along Stinking Water Creek, a tributary of Sand Creek, which is a tributary to Antelope Creek (all three of these populations are on BLM-administered lands in northwest Converse County (Casper Field Office); one population along Bear Creek in southwestern Goshen County (Casper Field Office) and a second population along Bear Creek in north-central Laramie County (Rawlins Field Office) (both of these populations are on state lands); a large population along the Niobrara River near McMaster's Reservoir in southeastern Niobrara County (Newcastle Field Office) on private land; and two populations along Sprager Creek in Laramie County (Rawlins Field Office) on private lands. Another population occurs on private lands in the Horse Creek watershed in Laramie County (Rawlins Field Office). These populations were all discovered between 1993 and 2005. They are monitored on a limited basis and appear to be stable. Mowing occurs on at least four of the sites and grazing occurs on all of the sites and appears to have only minor impacts on the populations. In fact, the combination of mowing and grazing appears to benefit Ute ladies'-tresses on the private parcels.

Because it may not flower or emerge every year, there may be unknown populations throughout the state. The total number of individuals from known populations in the state is estimated to be approximately 3,000 to 4,000 plants in a total area of about 50 acres, although the population numbers may fluctuate from year to year. Populations range in size from small patches of 12 to 35 individuals to the largest population of 1,000 to 2,000 plants.

4.6.5. Threats

Ute ladies'-tresses, in general, are not common plants. Most are rare in their distribution. This makes it difficult to assess the stability of any given population. Furthermore, the naturally occurring low population numbers make the species susceptible to localized extinction caused by natural or man-made disasters. Historical accounts typically help realize the population trends, but populations in Wyoming were not discovered until 1993. Although no trend data are available, populations in Wyoming are considered stable. Continued presence/absence surveys and population studies will provide data necessary to quantify statewide trends in distribution and populations.

Changes in large ungulate populations may have affected the distribution of Ute ladies'-tresses. This species likely evolved according to the seasonal presence of large herbivores such as American bison,

elk, deer, and bighorn sheep. Changes in these species' distribution could have adversely affected Ute ladies'-tresses populations by removing them during late winter and early spring, possibly leading to a buildup of live and dead vegetation. Additionally, cattle grazing may alter both plant communities and stream ecology. Depending when a site is grazed, there is the possibility of removing flowering or fruiting stalks. With cattle introduction, there is the risk of noxious weed invasion. Canada thistle, reed canarygrass, and leafy spurge pose threats because they compete vigorously with Ute ladies'-tresses.

Herbicides applied to control noxious weeds and fertilizers from agricultural fields possibly affect Ute ladies'-tresses. Both direct applications to nearby agricultural fields and runoff from sites upstream have potentially harmful effects on Ute ladies'-tresses. Pesticides applied to nearby sites could affect bumblebee populations, which are the Ute ladies'-tresses primary pollinators.

Development in or near wetlands has had an effect on the distribution of Ute ladies'-tresses. Water diversion, channelization, and irrigation have all affected the species. All of these factors decrease the input of water into riparian systems or completely destroy habitat, thus eliminating potential habitat for this species. Conversely, some irrigated plots have proven to create habitat for Ute ladies'-tresses.

5.0 METHODS AND CONTEXT OF THE ANALYSIS

The Bighorn Basin Proposed Resource Management Plan (RMP) was reviewed to identify projected actions with the potential to affect listed species in the Planning Area. Much of the information used in the analyses for this Biological Assessment (BA) was drawn from the Wyoming Bureau of Land Management (BLM) Statewide Programmatic BAs. In some cases, the BLM, the United States Fish and Wildlife Service (USFWS), the Wyoming Natural Diversity Database, the Wyoming Game and Fish Department, and other consultants performed ground surveys and inventories as part of other planning documents or projects. Moreover, species recovery plans, action plans, critical habitat designation documents, and conservation plans were reviewed for further information on habitats, occurrences, life histories, and conservation measures.

5.1. Activity Description

Section 6.0 briefly describes each major resource program (i.e., air quality, cultural resources, livestock grazing, etc.) occurring on the public lands in the Planning Area where management actions are identified.

5.2. Effects Analysis

This BA analyzes the effects of a proposed *federal action*. A *federal action* is defined as anything authorized, funded, or carried out by the federal agency. *Direct impacts* are effects on the species or its habitats caused by an action and occur at the same time and place as the action. *Indirect impacts* are effects on the species or its habitat caused by an action occurring later in time or farther removed in distance than direct impacts, but which are still reasonably foreseeable. The analysis of all impacts includes the effects of interrelated and interdependent actions.

For the purposes of effects analysis under the Endangered Species Act (ESA), *cumulative effects* are defined as impacts of future state, tribal, and private actions reasonably certain to occur. Future federal actions will be subject to the consultation requirements established in ESA Section 7 and, therefore, are *not* considered cumulative to the proposed action.

Factors considered when analyzing effects include proximity of the action to the species or habitat of concern, geographic distribution of the action disturbance, timing of the action, nature of the action effect, action disturbance frequency, duration of the affecting action, action disturbance intensity, and action disturbance severity.

The BA process is focused primarily on *adverse impacts* to the species of concern. Although impacts to the subject species may be beneficial or detrimental in the long- or short-term, the effects determination of the assessment is based on and controlled by the likelihood of adversely affecting the species. In other words, for a BA, the impacts analysis is not an averaging process.

5.3. Effects Determinations

Determinations for each resource program (i.e., air quality, cultural resources, livestock grazing management, etc.) are based on the impacts of the management actions, the proposed protections for these actions, and conservation measures committed to by the BLM. Best Management Practices (BMPs) would provide an additional level of protection, but are not considered in the effects determination.

Threatened and Endangered Species Determinations – Determination categories for this BA for federally listed threatened and endangered species are defined below.

No effect (NE) – The appropriate conclusion when the BLM determines its proposed action will not affect listed species or critical habitats. The principle factors for this determination are that "suitable habitat" or the species does not exist in the analysis area, or the very nature of the action will not have any effect on an individual or its habitat. In this situation, no further contact with the USFWS is required.

May affect, but is not likely to adversely affect (NLAA-b, -i, -d) – The appropriate conclusion when effects on listed species or its critical habitats are expected to be completely beneficial (-b), or insignificant (-i), or discountable (-d). Beneficial effects have contemporaneous beneficial effects without adverse effects to the species or its critical habitat. (For example, there cannot be "balancing," where the benefits of the action would outweigh the adverse effects.) Insignificant effects relate to the size of the impact and should not reach the scale where take occurs. Discountable effects are extremely unlikely to occur. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects, or expect discountable effects (USFWS 1998). This type of effect requires informal Section 7 consultation with the USFWS and their concurrence with the determination.

May affect, is likely to adversely affect (LAA) – The appropriate conclusion if any adverse effect to the listed species or its critical habitats may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects to even just one individual plant or animal, then the proper effect determination for the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires formal Section 7 consultation with the USFWS.

Proposed Species (Includes Nonessential Experimental Populations) - Determination categories for this BA for proposed species are defined below.

Is not likely to jeopardize proposed species (NJ) — The appropriate conclusion when the action agency identifies situations in which the proposed action is not likely to jeopardize the continued existence of the proposed species. If this determination were reached, agency coordination and potential informal conference with the USFWS would be conducted on a case-by-case basis.

Is likely to jeopardize proposed species (LJ) — The appropriate conclusion when the action agency identifies situations in which the proposed action is likely to jeopardize the continued existence of the proposed species. If this determination is reached, formal conference with the USFWS is required.

BLM staff reviewed potential actions associated with the Bighorn Basin Proposed RMP and potential impacts to individual species to identify potential impact to the species if the actions were to occur within suitable habitat for the species.

This BA describes in detail potential actions that may affect listed species. Other potential actions that have been determined to have no effect on a species are not further discussed in detail. Projects and/or activities that have a no effect determination have been found to not occur within species' habitat. In addition, projects and/or activities that will not impact candidate species or their essential habitat are not discussed. Programs that do not have actions located within the habitat of a listed species have been identified as having no effect on that species.

5.4. Coordination and Conservation Measures

ESA section 7(a)(1) requires the federal agency (in this case, the BLM) to utilize all of its authorities in furthering the purposes of the ESA by implementing programs for the conservation of threatened and endangered species. To meet the requirements of section 7(a)(1), the BLM needs to consider conservation programs for the management of threatened and endangered species separate from any consultation requirements for actions affecting other special status species (e.g., BLM-sensitive species, state or federal species of concern). The conservation programs adopted need to be incorporated into the approved Resource Management Plan. Conservation recommendations serve several purposes, including presenting ways the BLM can assist species conservation in furtherance of statutory responsibilities; minimizing or avoiding the adverse impacts of a proposed action on threatened or endangered species; and identifying and recommending studies aimed at improving the understanding of a species' biology or ecology.

Management of listed threatened and endangered species is addressed in four primary ways, as follows:

- Through conservation measures, reasonable and prudent measures, and BMPs identified as part of a species listing package, recommended in the Biological Opinion (BO) from the USFWS in response to a BA, and through species protection measures determined through collaborative interagency and multidiscipline efforts.
- The BLM Wyoming Field Offices incorporate the *Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities*. These guidelines state that before performing activities in known or suspected habitats, the lessee or permittee is required to perform inventories or studies in accordance with BLM and/or USFWS guidelines to verify the presence or absence of federally listed threatened and endangered species. If the presence of one or more of these species is verified, the operation plans of a proposed action will be modified to include the protection of the species and its habitat, as necessary. Possible protective measures include seasonal or activity limitations, or other surface management and occupancy constraints.
- The BLM incorporates *Wyoming Standards for Healthy Rangelands* (BLM 1998b). As stated, the "standards apply to all resource uses on public lands," while the "guidelines apply specifically to livestock grazing management practices on the BLM-administered public lands." The development and application of these standards and guidelines are intended to achieve the following four fundamentals of rangeland health: (1) proper functioning of air and watersheds, (2) proper cycling of air, water, soil nutrients, and energy, (3) attainment of state water quality standards, and (4) sustained maintenance and management of the native fauna and flora of the area, including federally listed threatened and endangered species. These fundamental goals are achieved through inventory of natural resources, appropriate management actions aimed at these resources, monitoring and evaluation of the effectiveness of these management actions, and land management adjustments as necessary.
- *BLM Manual 6840*, *Special Status Species Management,* directs Field Office managers to implement special status species programs within their area of jurisdiction by (1) performing and maintaining current inventories, including surveys for occupancy of special status species on public lands, (2) providing for the conservation of special status species in the preparation and implementation of recovery plans with which the BLM has concurred, interagency plans, and conservation agreements, (3) ensuring that all actions comply with the ESA, its implementing regulations, and other directives associated with conserving special status species, (4) coordinating field office activities with federal, state, and local groups to ensure the most

effective program for special status species conservation, (5) ensuring actions are evaluated to determine if special status species objectives are being met, (6) ensuring all actions authorized, funded, or carried out by the BLM follow the interagency consultation procedures as outlined in 50 Code of Federal Regulations Part 402, and (7) ensuring results of formal section 7 consultations including terms and conditions in incidental take statements are implemented.

The conservation measures described in Section 5.5 are intended to minimize adverse impacts likely to result from implementation of the management actions provided in the Bighorn Basin Proposed RMP. Conservation measures can take three forms, as follows: the existing conservation measures in the Bighorn Basin Proposed RMP (Proposed Protections); BLM implementation of additional conservation measures that would reduce impacts to listed species; and an additional group of measures that the BLM will consider implementing that include any appropriate BMPs to further protect the species and its habitats. If new populations of the species are discovered, these measures would apply until such time that further investigation and subsequent consultation with the USFWS results in more appropriate management prescriptions.

5.5. Conservation Measures Common to All Species

The following general conservation measures for all listed threatened and endangered species will be applied under all resource programs and are not repeated in this BA under each management program. The Statewide Programmatic BAs and BOs authorized for each species, including all reasonable and prudent measures and terms and conditions, will be implemented for the Bighorn Basin Planning Area. Section 9.0 identifies conservation measures specific to species.

- Surface-disturbing activities are subject to the *Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities,* the *Wyoming BLM Reclamation Policy* issued under Instruction Memorandum WY 2009-022, and similar guidance and policy as updated over time. The *Wyoming BLM Mitigation Guidelines for Surface-Disturbing Activities* requires any lessee or permittee to perform inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of threatened or endangered species before any activities can begin onsite. In the event the presence of one or more of these species is verified, the operation plans of a proposed action will be modified to include the protection of the species and its habitat, as necessary. Possible protective measures may include seasonal or activity limitations or other surface management and occupancy constraints.
- The BLM may pursue a withdrawal from appropriation under the mining laws for special status species habitat on a case-by-case basis.
- The BLM will postpone or modify projects that may affect special status species to protect these species and will consult with the USFWS in such cases, as required by the ESA.
- The BLM will consult with stakeholders in postponing or modifying projects that may affect special status species.
- The BLM will assist authorized agencies in the restoration, reintroduction, augmentation, or re-establishment of threatened, endangered, and other special status species populations and/or habitats.
- Motorized vehicle use is limited to designated roads and trails in essential and recovery habitat for threatened or endangered species.
- All types of forest management will apply appropriate mitigation, that riparian/wetland areas will be managed to meet Proper Functioning Condition and the *Wyoming Standards for Healthy*

Rangelands, and the BLM work cooperatively to control outbreaks of grasshoppers and Mormon crickets.

- Areas harvested for timber are to be regenerated by natural or artificial means consistent with BLM policy, and vegetative communities are managed in accordance with the *Wyoming Standards for Healthy Rangelands*.
- Management prescriptions for invasive species include developing and maintaining an invasive species and pest management plan, prohibiting aerial application of pesticides within the boundaries of the Spanish Point Karst Area of Critical Environmental Concern, and coordinating with appropriate stakeholders to manage for the reduction of cheatgrass and other invasive species.
- Fish and wildlife management includes actions to appropriately mitigate the effects of surface-disturbing activities. Management actions include maintaining or improving important wildlife habitats through vegetative manipulations, habitat improvement projects, livestock grazing strategies, and the application of applicable guidance.
- The BLM prohibits surface-disturbing and disruptive activities in the Bighorn River Habitat & Recreation Management Plan (H&RMP) tracts and the BLM-administered tracts in Yellowtail Wildlife Habitat Management Area and applies a No Surface Occupancy restriction as appropriate.
- The BLM will continue to use and update existing HMPs (including the West Slope HMP, Bighorn River H&RMP and Absaroka Front HMP) as necessary to include management objectives and prescriptions for wildlife.
- BLM-administered public lands that contain identified habitat for Threatened and Endangered Species will not be exchanged or sold, unless it benefits the species.

This page intentionally left blank.

6.0 ANALYSIS OF PROPOSED MANAGEMENT ACTIONS AND EFFECTS

The following program analyses follow a linear process that starts with the resource activity description and runs through to a listing of effect determinations. For purposes of this Biological Assessment (BA), this section is divided into a discussion of each major functional resource activity occurring on the public lands in the Planning Area. For each major activity, a brief description of the resource activity, its interrelated and interdependent actions, and its general occurrence in the Planning Area is provided. Following the resource activity description are conservation strategies. These conservation strategies are divided into three categories, as follows: proposed protections identified for the Bighorn Basin Proposed Resource Management Plan (RMP); BLM-committed conservation measures from existing BLM statewide programmatic BAs; and, Best Management Practices (BMPs). The proposed protections identified in the Bighorn Basin Proposed RMP are those protections for the resource that will benefit threatened and endangered species. The conservation measures specific for each resource come from the existing BLM statewide programmatic BAs for each species analyzed. The BMPs include standard Bureau of Land Management (BLM) BMPs that could further protect each resource. This information provides the basis for the impacts analysis and effect determinations presented by species and their respective habitats, and the potential direct, indirect, and cumulative effects of the activity. A comprehensive list of the species-specific coordination and conservation measures used in the impacts analysis and effects determination is provided in Section 9.0.

Designated Critical Habitat "No Effect" and "Not Likely to Adversely Affect"

There is no designated critical habitat in the Bighorn Basin Planning Area.

Non-Essential, Experimental Gray Wolf Population Analysis

The analysis must address whether the activities described in the Bighorn Basin Proposed RMP could jeopardize the continued existence of the gray wolf, rather than potential impacts to individuals. With this higher threshold, the analysis results in the conclusion that all of the BLM programs evaluated in this document present "**No Jeopardy**" to the species, because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

6.1. Air Quality

The BLM's air quality program includes monitoring efforts in cooperation with the United States Forest Service, the Wyoming Department of Environmental Quality (DEQ), and the U.S. Environmental Protection Agency, and evaluating and restricting surface development. Various facilities around Wyoming monitor for air quality components, including include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), lead (Pb), visibility, and atmospheric deposition. Regional air quality is influenced by the interaction of several factors, including meteorology, climate, the magnitude and spatial distribution of local and regional air pollutant sources, and the chemical properties of emitted air pollutants. Air quality management actions typically are associated with limiting, reducing, and monitoring pollutant levels and dust during other BLM management actions.

The climate in the Planning Area is designated as a combination of Intermountain Semi-desert and Southern Rocky Mountain Steppe. Summers are generally hot and short, and winters long and cold. Precipitation is generally low, although greater at higher elevations, and is generally evenly distributed

across the year, with the exception of the drier summer months. Wind speeds are variable and generally strong. With only two air quality monitors in the Planning Area (Cody/PM_{10} and North Absaroka/ Interagency Monitoring of Protected Visual Environments [IMPROVE]), it is difficult to accurately assess existing air quality conditions throughout the area. However, as noted above, air quality, visibility, and atmospheric deposition are monitored throughout Wyoming, including adjacent Planning Areas. The examination of data collected at the two monitors in the area, supplemented by various monitors in neighboring Planning Areas, indicates that the current air quality for criteria pollutants in the Planning Area is considered good overall. Based on measurements in the area, visibility in the Planning Area is considered excellent.

Since 1980, the IMPROVE network has measured visibility in national parks and wilderness areas. These are managed as high visual quality Class I and II areas under the federal visual resource management (VRM) program. There are six IMPROVE stations in Wyoming, including one in the Planning Area at the North Absaroka site and two adjacent to the Planning Area (in the BLM Buffalo Field Office Planning Area) at the Thunder Basin National Grasslands and Cloud Peak National Wilderness areas. Atmospheric deposition refers to processes in which air pollutants are removed from the atmosphere and deposited into terrestrial and aquatic ecosystems. Air pollutants can be deposited by wet (precipitation via rain or snow) or dry (gravitational) settling of particles and adherence of gaseous pollutants to soil, water, and vegetation. Much of the concern about deposition is due to secondary formation of acids and other compounds from emitted nitrogen and sulfur species such as oxides of nitrogen (NO_x) and SO_2, which can contribute to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity.

There are a wide variety of hazardous air pollutants (HAPs), including benzene, toluene, ethylbenzene, xylene (also referred to as BETEX), N-hexane, and formaldehyde. Existing sources of HAPs, criteria pollutants, and Greenhouse Gas in the Planning Area include fossil fuel combustion that emits HAPs; oil, gas, and coal development operations that emit volatile organic compounds; NO_X; and hydrogen sulfide (H_2S). In addition, large fires are a source of HAPs emissions.

6.1.1. Proposed Management Actions for Air Quality under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following air quality protections that benefit threatened and endangered species:

- The BLM may facilitate discussions with stakeholders to implement mitigation measures beyond BLM's authority, to reduce emissions from current levels in the Planning Area.

6.1.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BAs and Biological Opinions (BOs) (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to air quality.

6.1.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for air quality that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and

BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.1.4. Impact Analysis and Effects Determination

In addition to the above management actions, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Actions related to air quality management will result in no impacts to lynx behavior, denning habitat, or foraging habitat. No monitoring stations are currently located, or proposed for location, in any lynx analysis units (LAUs) on BLM-administered lands within the Bighorn Basin Planning Area. Implementation of air quality management actions will have *no effect (NE)* on the Canada lynx. This determination is based on the lack of overlap of air quality management activities and Canada lynx habitat under the Proposed RMP.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Actions related to air quality management will result in no impacts to grizzly bear behavior, denning habitat, or foraging habitat. The actions associated with air quality management are relatively small in scope, of short duration, and unlikely to occur in grizzly bear habitat. The construction and maintenance of air quality monitoring stations could conceivably cause indirect impacts to grizzly bears if they were present during the action, but the actions associated with air quality management are relatively small in scope, and of short duration, and could be mitigated through timing. Conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementation of air quality management actions *may affect, but is not likely to adversely affect*, the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the level of impacts due to management actions that are relatively small in scope and of short duration occurring in grizzly bear habitat.

North American Wolverine – Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges and air quality monitoring stations are not anticipated to be constructed in these areas. Implementing air quality management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of overlap of air quality management activities and North American wolverine habitat and the unlikelihood of resultant adverse impacts.

Ute Ladies'-tresses – Currently no air quality monitoring stations exist in Ute ladies'-tresses potential habitats within the Bighorn Basin Planning Area. No air quality monitoring stations are to be constructed within 500' of Ute ladies'-tresses potential habitat. Implementing air quality management actions will result in *no effect (NE)* to the Ute ladies'-tresses. This determination is based on the absence of air quality monitoring station in riparian habitat, the lack of plans to construct an air quality monitoring station near Ute ladies'-tresses potential habitats, and the current lack of known occurrence of this species within the Planning Area.

6.1.5. Cumulative Effects

Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Actions authorized by the BLM on BLM-administered lands may also occur on state, tribal, local, or private lands in the Planning Area. Surface-disturbing actions anticipated in the Planning Area from non-BLM actions are not expected to adversely impact threatened and endangered species in the Planning Area because the additive effects of these disturbances are not anticipated to increase from current levels, (see Appendix T).

6.2. Soil

Variations in parent material, along with variable climate, topography, and vegetation, has resulted in soils with diverse characteristics and textures. Past land uses in the Planning Area have resulted in a network of incised gullies extending into the uplands, often replacing what are thought to have been broad grass-covered swales. Based on qualitative rangeland health assessments, most gullies are in the process of healing and stabilizing. Qualitative assessments show an upward trend in the overall health of the soil resource. The ability of the watersheds to capture and slowly release water without excessive erosion is expected to continue to improve.

Despite some evidence that water is not being retained on the landscape as it once was and that soils are being affected in some areas, the soil resource remains capable of producing forage for wildlife and livestock. It is also proving capable of maintaining a balance between infiltration and runoff, thus protecting watershed condition. The soil resource should be capable of sustaining increased demands without long-term impacts.

Surface-disturbing activities are likely to be the greatest demand on the soil resource. Development of mineral resources, including road building, well pad construction, pipeline installation, and vegetation treatments all impact the soil resource. Other actions that affect soils include a variety of surface uses that loosen topsoil and remove vegetation or other groundcover, such as grazing and browsing by animals, off-highway vehicle (OHV) use, development of trails and campgrounds, rights-of-way (ROW), fire-suppression activities, and prescribed fires. Soil compaction resulting from surface-disturbing activities and associated development can reduce infiltration, increase runoff, and hamper reclamation.

Use restrictions or preferred management practices intended to limit soil erosion and loss of soil productivity protect soil resources. Some restrictions may be applied to all surface-disturbing activities, while others may include site-specific management techniques, such as salvaging topsoil or using temporary protective surface treatments including weed-free mulch, matting, netting, or tackifiers to facilitate reclamation. The BLM applies restrictions and implements mitigation measures and BMPs to protect soil resources. In addition, The BLM incorporates *Wyoming Standards for Healthy Rangelands* in the State of Wyoming (BLM 1998b) and the *Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities,* which will protect soil resources.

Activities associated with soil resources may include assessing erosion rates and soil stability, conducting soil surveys, evaluating erosion condition of soils in the Planning Area, preventing soil erosion from disturbed areas, establishing successful reclamation or rehabilitation on disturbed areas, closing or reclaiming roads and trails, managing to maintain long-term soil stability, and monitoring, evaluating, and adapting management actions.

6.2.1. Proposed Management Actions for Soil under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following soil protections that benefit threatened and endangered species:

- Stabilize existing watershed improvement projects to prevent the release of stored sediment if projects are no longer needed to meet resource objectives.
- Assess erosion and soil stability during rangeland health evaluations.
- Incorporate erosion rates and soil stability into soil survey efforts as soil survey funds become available.
- Allow seeding of areas disturbed by surface-disturbing activities (as part of interim and final reclamation) and areas not meeting resource objectives using approved BLM seed mixtures.
- In disturbed areas, reestablish healthy native or desired plant communities based on pre-disturbance/desired plant species composition.
- When appropriate for the site and situation, require temporary protective surface treatments such as weed-free mulch, matting, netting, or tackifiers to facilitate the reclamation of areas affected by authorized or unauthorized surface-disturbing activities. If needed, allow, the use of sterile, weed-free temporary protective surface treatments to facilitate reclamation following wildfires.
- Interim and final reclamation will begin at the earliest feasible time.
- Successful final reclamation of the desired vegetative cover will be considered achieved if conditions are equal to or better than pre-disturbance site condition.
- Require reclamation in compliance with BLM policy, including Instruction Memorandum (IM) No. WY-2009-022 and similar guidance updated over time.
- Reclamation plans, stipulations, and/or mitigation and monitoring measures are required prior to approval of all authorized surface-disturbing activities.
- Develop specific objectives and timeframes for reclamation plans in coordination with stakeholders.
- In consultation with stakeholders and subject to site-specific National Environmental Policy Act (NEPA) actions, close and reclaim unnecessary and/or heavily eroded roads and trails if other stable roads and trails are available on a priority basis.
- Stabilize or relocate heavily eroded or washed out roads and trails if other stable roads and trails are unavailable on a priority basis.
- Salvage and segregate topsoil for all applicable surface-disturbing activities. Use salvaged topsoil in the reclamation of the associated surface disturbance.
- Channel crossings and surface disturbance are subject to the monitoring and reporting requirements of Reclamation Requirement 10 of the Wyoming Reclamation Policy, where applicable, and similar guidance updated over time.

6.2.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BAs or BOs (Section 9.0). Conservation measures for the threatened

and endangered species analyzed in this BA that specifically apply to soil resource management are listed below.

Ute Ladies'-tresses

- Within the potential of the ecological site (soil type, landform, climate, and geology), the BLM will ensure that the soils are stable and allow water infiltration to provide for optimal plant growth and minimal surface runoff.

6.2.3. Best Management Practices

The following BMPs have been identified for reseeding to protect soils:

- Collecting seeds of species or local genotypes that are commercially unavailable prior to surface disturbance to be used during reclamation and propagating seedlings to expedite vegetation recovery.
- Collecting seeds under the procedures of the seeds of Success Program for use in research and development for commercial availability and long-term storage to identify and protect local native biodiversity.
- Identifying sustainable plant communities to be managed to consistently produce native seed stocks of non-commercially available materials for use in reclamation and restoration.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.2.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Actions related to soil management will result in no impacts to lynx behavior, denning habitat, or foraging habitat. Activities associated with soil mapping and sampling may include disturbances that are usually localized and of short duration so as not to disturb lynx. These soil resource related activities in the Planning Area are mainly in support of other programs. Implementing soil resource management actions *may affect, but is not likely to adversely affect,* the lynx due to *discountable effects (NLAA-d)*. This determination is based on the conservation measures in place that will preclude adverse effects to the lynx or its habitat and will minimize or remove impacts to lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Actions related to soil management will result in no direct impacts to grizzly bear behavior, denning habitat, or foraging habitat. The actions associated with soil management are relatively small in scope, of short duration, and unlikely to occur in grizzly bear habitat. The construction and maintenance of soil management activities could conceivably cause indirect impacts to grizzly bears if they were present during the action, but the actions associated with soil management are relatively small in scope, and of short duration. Conservation measures include restrictions on the timing of

activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementing soil management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the lack of impacts due to management actions that are relatively small in scope and of short duration occurring in grizzly bear habitat.

North American Wolverine – Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing soil management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the limited presence of suitable habitat for this species in the Planning Area and the unlikelihood that soil management activities would occur in suitable wolverine habitat.

Ute Ladies'-tresses – Activities associated with soil resources are not expected to impact the Ute ladies'-tresses in an adverse way and may even lead to beneficial impacts. Soil mapping or sampling actions, including soil testing, may result in minimal temporary impacts to Ute ladies'-tresses potential habitat due to the short duration of time spent sampling and the reclamation of the disturbance. However, the BLM will ensure that soils are stable and allow water infiltration to provide for optimal plant growth and minimal surface runoff within Ute Ladies'-tresses habitat. Management actions that improve habitats through revegetation, reseeding, and other rehabilitation actions may benefit the Ute ladies'-tresses habitat. Reductions in sedimentation and erosion within the drainages and waterways also will benefit the Ute ladies'-tresses habitat. Construction of sediment control and watershed stabilization projects may benefit Ute ladies'-tresses habitat. Soil-damaging actions are prohibited on moist soils, where the Ute ladies'-tresses typically is found. Implementing soil management actions *may affect, but is not likely to adversely affect*, the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the localized, infrequent occurrence and relatively small scale of these actions, potential benefits, existing conservation measures in place to protect this species, and the current lack of known occurrences of the species within the Planning Area.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Actions that disturb or compact soil, disrupt soil stability, or reduce soil productivity could adversely impact threatened, or endangered species on nonfederal lands. Actions that stabilize soils or increase soil productivity may benefit these species. As these types of actions occur on nonfederal lands, the adverse or beneficial impacts may influence the habitats of threatened or endangered species.

6.3. Water

Surface water resources in the Planning Area fall within U.S. Geological Survey (USGS) Water Resources Region 10 and are all tributaries of the Missouri River. The Bighorn River, Wind River, Clarks Fork of the Yellowstone River, and their associated tributaries, including the Nowood, Greybull, and Shoshone river systems, comprise the main source of surface water in the Bighorn Basin. There are 12 major aquifers in the Planning Area – Quaternary, Fort Union/Lance, Willwood, Mesaverde, Frontier, Muddy, Cloverly, Sundance, Phosphoria, Ten Sleep, Madison, and Flathead. The Madison is the primary aquifer that supplies water for several municipalities in the Planning Area (Wyoming Water Development Commission 2003).

The development and use of resources requiring surface disturbance, resource uses, motorized vehicle use, and recreation can impact surface water quality, primarily by increasing sediment loads. Stream

bank degradation and erosion, and gully erosion due to poor vegetative cover and surface disturbances (e.g., roads and construction activities) are the predominant sources of excessive sediment in streams. Oil and gas development can result in large volumes of produced water that can have beneficial and adverse effects on surface water and can reduce groundwater availability. The release of produced water can increase or extend the period of flow in drainages; such releases can provide valuable sources of water in the Planning Area. However, discharges of produced water also can increase the total dissolved solids concentration of surface waters, result in increased survival and spread of invasive species adapted to the conditions created, and substantially increase erosion in ephemeral drainages (BLM, Montana DEQ, and MBOGC 2003; BLM 2009a). Proper management of vegetation and surface-disturbing activities such as road construction, forestry, oil and gas discharges, and mining in the Planning Area can mitigate sediment delivery due to these activities.

The BLM performs a variety of activities to preserve and protect water and watershed quality. Some of these activities include developing and implementing watershed plans, evaluating proposed projects, monitoring water quality, controlling soil erosion and water runoff, restricting mineral exploration and development, and monitoring public drinking water. Surface-disturbing or other activities associated with water resources include restricting surface disturbance near water resources or sensitive soils; installing fences near springs, wetlands, reservoirs, and riparian areas to meet resource objectives; and installing sediment and erosion control structures; and designing or retrofitting culverts in streams to minimize sediment movement.

6.3.1. Proposed Management Actions for Water under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following water protections that benefit threatened and endangered species:

- Develop watershed improvement practices in cooperation with local governments to reduce sediment loading in stream and river systems and in lakes and reservoirs. Once developed, include in all activity plans and permitted activities.
- Apply BMPs and work in cooperation with stakeholders on activity plans and other authorized activities.
- In cooperation with other stakeholders, encourage the maintenance of natural flow regimes in priority streams supporting fisheries in compliance with Wyoming water laws.
- Springs, wetlands, reservoirs, and riparian areas may be fenced, as necessary, to meet resource objectives. Provide offsite water as necessary.
- Cooperate with adjacent landowners, managers, and the Wyoming DEQ to address waterbodies not meeting state water quality standards.
- Prioritize and implement BMPs to address causal factors related to the impairment of water quality of waters where the preponderance of evidence indicates that failure to meet such standards is the result of BLM management actions or permitted activities.
- Authorize new activities resulting in the surface discharge of produced water where compatible with other resource objectives and in consultation with stakeholders.
- Require water management plans for new activities resulting in surface discharges of produced water, which include reclamation strategies, mitigation, and monitoring to track changes in receiving channels and to minimize adverse impacts to watershed health.

6.3.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to water resources are listed below.

Grizzly Bear

- All permit holders that conduct activities on public lands in occupied grizzly bear habitat that could result in livestock carcasses being left in locations where bears might be attracted to them shall be informed that all livestock carcasses or parts of carcasses shall be either packed, dragged, or otherwise transported to a location a minimum of ½ mile from any inhabited dwelling, sleeping area, tent, road, trail, or recreation site in as timely a manner as possible, unless otherwise directed by a BLM range/wildlife specialist or ranger. Carcasses shall be moved at least 100 yards from live water. Other options for carcass disposal may include using explosives or burning the carcass at the discretion of a BLM range/wildlife specialist or ranger. In cases of uncertainty about carcass disposition the permit holder (or lessee) shall contact the appropriate BLM field office.
- The BLM shall require that the Proper Functioning Condition of existing aquatic systems and riparian zones in occupied grizzly bear habitat be maintained for all BLM-administered public lands. If these areas are polluted and/or damaged from activities, lessee/permittee/ grantee or the BLM will be required to assume full responsibility for rehabilitation and restoration of such areas.

Ute Ladies'-tresses

- Surface disturbance will be prohibited within 500 feet of surface water and/or riparian areas.
- The BLM will ensure that grazing management practices will restore, maintain, or improve plant communities. Grazing management strategies consider hydrology, physical attributes, and potential for the watershed and the ecological site.
- The BLM will manage stream habitats to retain, re-create, or mimic natural hydrology, water quality, and related vegetation dynamics. Projects that may alter natural hydrology or water quality, change the vegetation of the riparian ecosystem and cause direct ground disturbance will be evaluated and redesigned to ensure that adverse effects to populations of the Ute ladies'-tresses do not occur.
- The BLM will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Ute ladies'-tresses populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Ute ladies'-tresses populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Ute ladies'-tresses populations and potential overgrazing of the areas occupied by the species. Surveys for Ute ladies'-tresses will be conducted in potential Ute ladies'-tresses habitat prior to livestock operations related construction projects.

6.3.3. Best Management Practices

The Proposed RMP proposes the following BMPs for oil and gas activities near water resources that benefit threatened and endangered species:

- Use closed-loop drilling systems.
- Review the geology of shallow aquifers in proximity to groundwater development activities to determine potential impacts to flow patterns supporting water elements such as fens, wetlands, springs, and seeps, and ponds.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.3.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Water management actions would occur in a small portion of Canada lynx habitat and be short-term in nature. Access for these activities would be primarily by vehicle (pickup truck, etc.). Some disturbance to streams or rivers during construction and occasional maintenance of monitoring equipment may occur. Riparian habitat restoration to reduce erosion and sediment movement along watercourses would be disruptive to resident lynx, but beneficial to the species and its prey in the long-term. Fencing of riparian/wetland habitat to meet resource objectives would also benefit Canada lynx in protecting this habitat. The activities associated with this management action are infrequent, small in scale, and not likely to occur in lynx habitat. Implementing water-resource management actions *may affect, but is not likely to adversely affect* the lynx due to *discountable effects (NLAA-d*). This determination is based on the conservation measures in place that will preclude adverse effects to the lynx and its habitat, the low potential for water management actions to occur in lynx habitat, and the likelihood of habitat improvement.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Actions related to water management will result in no impacts to grizzly bear behavior, denning habitat, or foraging habitat. Water management actions would occur in a portion of grizzly bear habitat and be short-term in nature. Access for these activities would be primarily by vehicle (pickup truck, etc.). Some disturbance to streams or rivers within grizzly bear habitat during construction and occasional maintenance of monitoring equipment may occur. However, conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Riparian habitat restoration to reduce erosion and sediment movement along watercourses would be disruptive to resident grizzly bears, but beneficial to the species and foraging habitat in the long-term. The activities associated with this management action would be infrequent and small in scale. Implementing water resource management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d*). This determination is based on the lack of impacts

due to management actions that are relatively small in scope and of short duration occurring in grizzly bear habitat.

North American Wolverine – Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing water resource management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of overlap of water resource management actions occurring in potential wolverine habitat.

Ute Ladies'-tresses – Management actions associated with water resources are infrequent and typically small in scale. Overall, these types of management actions may benefit the species and its habitat by maintaining or improving riparian habitat condition. Fencing springs, wetlands, and riparian areas would also benefit the Ute ladies'-tresses. Implementing water resource management actions *may affect, but is not likely to adversely affect*, the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on no known populations of Ute ladies'-tresses occurring in the Planning Area and the incorporation of conservation measures for the protection of this species. If water resource management actions are conducted in potential Ute ladies'-tresses habitat, this species could incur beneficial effects of habitat improvement. Secondary beneficial effects may be realized for the Ute ladies'-tresses through habitat maintenance and improvements.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Protection of water resources in the Planning Area on nonfederal lands will improve habitat for threatened and endangered species. The enhancement of water resources in the Planning Area on nonfederal lands may improve habitat for threatened and endangered species, but may also adversely impact certain habitats if water enhancement or development activities negatively alter hydrologic regimes. Surface disturbance and other actions could increase sedimentation of waterways and may potentially impact threatened and endangered species such as Ute Ladies'-tresses.

6.4. Cave and Karst Resources

Cave and karst resources are abundant in the Bighorn Basin. There are 32 known caves in the Planning Area, of which 19 are considered significant according to The Federal Cave Resources Protection Act criteria (BLM 2009b). Cave and karst resources are fragile because of their association with other resources such as groundwater systems and biological communities. They also might be considered nonrenewable resources because of paleontological and archeological deposits, and speleothems (mineral formations inside caves) they contain. In the Planning Area, the cave and karst system along the west slope of the Big Horn Mountains in the Medicine Lodge area is important due to mineral features such as speleothems, potential for diverse karst aquatic organisms, cultural and paleontological resources, and recreation opportunities. This area is hydrologically important because of the presence of disappearing surface water streams and its link to regional groundwater aquifers. This system includes rock outcrops of the Madison Limestone, Bighorn Dolomite, and Ten Sleep Sandstone, all of which are primary recharge areas for regional aquifers in the Bighorn Basin. A portion of this area is designated as an Area of Critical Environmental Concern (ACEC) for the protection of cave and karst resources.

BLM policy and guidance for managing cave resources is to protect sensitive, fragile, biological, ecological, hydrological, geological, scientific, recreational, cultural, and other cave values from damage

and to ensure they are maintained for public use, both now and in the future (BLM 2008a). Actions associated with cave and karst management include timing restrictions to protect cave resources, closing cave and karst areas for safety reasons or to protect resources, allowing scientific research and recreational use of caves, and installing gates as necessary to protect resources. The BLM manages all caves in Planning Area in a wild state; there are no developed caves on public lands in the Planning Area.

6.4.1. Proposed Management Actions for Cave and Karst Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following cave and karst protections that benefit threatened and endangered species:

- Close cave and karst areas during all critical periods for bats and when user safety is at risk due to high water, radon, H_2S, and fire.
- Allow scientific research of cave and karst areas on a case-by-case basis.

6.4.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA are specific to cave and karst resources.

6.4.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for special cave and karst resources that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.4.4. Impact Analysis and Effects Determination

In addition to the above management actions, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Actions associated with cave and karst management that might impact Canada lynx include installing gates as necessary to protect resources. If an individual lynx were passing through the area, it may be disturbed temporarily and disperse from the area. There are no direct effects anticipated for the Canada lynx. Implementing management actions associated with cave and karst resources *may affect, but is not likely to adversely affect*, the Canada lynx due to *discountable effects (NLAA-d)*.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Actions associated with cave and karst management that might impact the grizzly bear include installing gates as necessary to protect resources. If an individual grizzly bear were passing

through the area, it may be disturbed temporarily and disperse from the area. Conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. There are no direct effects anticipated for the grizzly bear. Implementing management actions associated with cave and karst resources *may affect, but is not likely to adversely affect*, the grizzly bear due to *discountable effects (NLAA-d)*.

North American Wolverine – There are no direct or indirect effects anticipated for the wolverine, as this species does not use caves. If an individual wolverine were passing through the area, it may be disturbed temporarily and disperse from the area. Implementing management actions associated with cave and karst resources *is not likely to jeopardize (NJ)* on the wolverine. This determination is based on the habitat use of the wolverine.

Ute Ladies'-tresses – There are no direct or indirect effects anticipated for the Ute ladies'-tresses, as this species does not occur in caves. Implementing management actions associated with cave and karst resources would have *no effect (NE)* on the Ute ladies'-tresses. This determination is based on the lack of overlap of Ute ladies'-tresses habitat and Cave and Karst resources.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Recreational use of caves on nonfederal lands could occur, but is anticipated to be minimal and cumulative impacts from use of caves on nonfederal lands would also be minimal.

6.5. Locatable Minerals

The BLM' mineral development program is divided into three categories, as follows: locatable (bentonite, gypsum), leasable (coal, oil shale, geothermal, oil and gas, and other solid leasables), and salable (sand, gravel) minerals.

All public lands are open to exploration for locatable minerals, except for those withdrawn to protect other resource values and uses or those lands with acquired mineral status. Locatable minerals (metallic and nonmetallic) are those open to mining claim location under the General Mining Law of 1872, as amended (30 United States Code [U.S.C.] 22-54 and 611-615). The BLM locatable mineral program addresses authorization and permitting of locatable mineral exploration, mining, and reclamation activities on BLM-administered land, and is mandated by section 302(b) of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1732[b] and 603[c], 43 Code of Federal Regulations [CFR] 3802, and 43 CFR 3809). All locatable mineral exploration and development activities that disturb the surface of the mining claim (site) require prior BLM acceptance (for a notice) or authorization (for a plan of operations). Operations obtain necessary authorizations and permits through the BLM field office responsible for administering the land in which the minerals are located. Under the Proposed RMP, 211,398 acres are withdrawn from locatable mineral entry and 3,839,538 acres are available for locatable mineral entry. In the Planning Area, approximately 20,000 acres of short-term surface disturbance and approximately 10,000 acres of long-term surface disturbance is anticipated from locatable mineral development over the life of the plan.

The primary locatable minerals mined commercially in the Planning Area are bentonite and gypsum. Other locatable minerals known to occur in the Planning Area include titaniferous sandstone, placer gold, uranium, and sulfur; however, these minerals are not known to occur in commercially viable quantities in the Planning Area. Silica sand is present in the Bighorn Basin in the John Blue Canyon deposit, and is of sufficient quality for glass, fused silica, metallurgical flux, abrasives, fillers in ceramics,

and as an ore for making silicon metal (BLM 2009c). However, the prohibitive quantity of overburden overlying known silica sand resources would make any attempt at commercial production very difficult. Base and precious lode metals such as gold, silver, platinum, and copper are not known to occur in commercial quantities in the Bighorn Basin. Precious and semiprecious stones are not known to occur in the Planning Area.

Activities associated with locatable minerals include surface disturbance for mining, reclamation, and construction of access roads, buildings, and utility lines. All lands must be reclaimed after completion of mining.

6.5.1. Proposed Management Actions for Locatable Minerals under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not propose management actions for locatable minerals that benefit threatened and endangered species.

6.5.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to locatable minerals are listed below.

Canada Lynx

- The BLM shall limit disturbance in each LAU to 30 percent of the suitable habitat within the LAU. If 30 percent of the habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of management activities. The BLM shall map oil and gas production and transmission facilities, mining activities and facilities, dams, timber harvest, and agricultural lands on public lands and evaluate projects on adjacent private lands to assess cumulative effects. This will involve interagency coordination where LAUs cross administrative boundaries, primarily with the United States Forest Service.

Grizzly Bear

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.
- The BLM shall ensure that operation plans and special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. All temporary living facilities under temporary use permits in occupied grizzly bear habitat will be required to practice proper food storage and keep all potential attractants stored so they are unavailable to bears. Edibles and/or garbage will be secured from access by grizzly bears. Bear proof refuse containers, and timely refuse collection to prevent overflow, shall be required.
- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.

6.5.3. Best Management Practices

There following BMPs for related to road construction would be applied in the development of locatable mineral resources.

Resource uses and development requiring road construction, maintenance, or any related travel and transportation management is mandated by BLM Manual 9113. BLM Manual 9113 includes the following BMPs to be used in evaluating, maintaining, and constructing transportation routes:

- Design roads to minimize total disturbance, to conform with topography, and to minimize disruption of natural drainage patterns.
- Minimize excavation.
- Retain vegetation on cut slopes where feasible and prevent disturbance to root systems during roadside brushing.
- Consider improving inadequately surfaced roads to minimize sediment production.
- Retain adequate vegetation between roads and streams to filter runoff caused by roads.
- Avoid riparian/wetland areas where feasible and locate roads and limit mechanized equipment activity to minimize their influence on riparian areas and water quality.
- Abandon, close, and rehabilitate roads that are no longer needed.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.5.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Mining projects are subject to specific stipulations and regulations that limit surface activities by season and proximity to specific resources. Because of the 1872 mining law, the BLM has little discretionary authority over locatable mining activities. In the Planning Area, there is little overlap of LAUs and known bentonite-bearing or gypsum-bearing strata. Conservation measures limiting the disturbance in each LAU to 30 percent of the suitable habitat within the LAU and not changing more than 15 percent of lynx habitat within an LAU to an unsuitable condition within a 10-year period would minimize adverse impacts to Canada lynx. The BLM is also committed to maintaining connectivity within and between LAUs, and avoiding activity near denning habitat during the breeding season will help minimize the adverse effects of mineral development on Canada lynx. Implementing locatable mineral management actions *may affect, but is not likely to adversely affect* the Canada lynx due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event of mining occurring within LAUs, and the incorporation of existing conservation measures for Canada lynx.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Human activities and development of roads associated with locatable mineral exploration and development could affect grizzly bears. In the Planning Area, there is little overlap of grizzly bear habitat and known bentonite-bearing or gypsum-bearing strata. If mining development occurs, the BLM

would apply additional stipulations, developed through consultation with the USFWS, to minimize human-bear conflicts. The BLM-committed conservation measure requiring disturbed lands be revegetated and reclaimed in consideration of grizzly bear needs, and restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity would help minimize adverse impacts to this species. Implementing management actions associated with locatable mineral resources *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the unlikely occurrence potential of locatable minerals in known grizzly bear habitat, and the incorporation of existing conservation measures.

North American Wolverine – Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. Implementing locatable mineral management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on locatable mineral management actions not occurring in potential wolverine habitat.

Ute Ladies'-tresses – The potential for direct effects will be minimized by the prohibition of surface-disturbing activities at least within 500 feet and up to ¼ mile if needed to protect sensitive resources and riparian/wetland areas. Implementation of locatable minerals management actions *may affect, but is unlikely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event of locatable mineral entry taking place in potential habitats for Ute ladies'-tresses and the current lack of known occurrence of this species within the Planning Area.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Additional surface disturbance from locatable mineral actions on nonfederal lands could adversely impact threatened or endangered species by further fragmenting the habitats, increasing road densities, spreading invasive species, and degrading habitats for these species.

6.6. Leasable Minerals – Coal

Coal is the only solid leasable mineral currently mined in the Planning Area. There is only one active coal mine in the Planning Area, and it produces about 70,000 to 100,000 tons per year from the Grass Creek Coal Field. This coal mine is on private land, not BLM-administered land (BLM 2008b). Currently, there are no exploration licenses or leases issued for BLM-administered coal in the Planning Area (BLM 2008b). However, there are federal coal resources in the Planning Area, primarily in the Cretaceous Mesa Verde, Meeteetse, and Paleocene Fort Union formations. Several scattered parcels of land have mineral reservations specifically for coal or designated coal classifications. Coal production in the Planning Area is generally not considered economically feasible due to the relative thinness of the coalbeds, thickness of the overburden, and low quality of the coal.

The BLM does not anticipate reasonable foreseeable coal exploration, leasing, or development during the life of the RMP. If the BLM receives an application for a federal coal lease, an appropriate land use and environmental analysis, including the coal screening process, would be necessary to determine whether the area(s) proposed for leasing are acceptable for coal development and leasing (in accordance with 43 CFR 3425).

6.6.1. Proposed Management Actions for Leasable Coal under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for leasable coal that benefit threatened and endangered species:

- Consider interest in exploration for, or leasing of, federal coal if any, on a case-by-case basis.
- Allow coal exploration licenses subject to the regulations of 43 CFR 3410, and subject to guidance mitigating for surface-disturbing activities in the *Wyoming BLM Standard Oil and Gas-Lease Stipulations*.
- Before issuing a coal exploration license, require the authorized officer to prepare an environmental assessment or environmental impact statement, if necessary, of the potential effects of the proposed exploration on the natural and socioeconomic environment of the affected area.
- If an application for a federal coal lease is received, conduct an appropriate land use and environmental analysis, including the coal screening process, to determine whether the area(s) proposed for leasing is (are) acceptable for coal development and leasing (in accordance with 43 CFR 3425). If public lands are determined to be acceptable for further consideration for coal leasing, amend the land use plan as necessary.
- Only accept federal coal lease applications on those federal coal lands with development potential identified as suitable for further leasing consideration, after application of the coal screens and unsuitability criteria.
- Continue all coal and phosphate withdrawals and classifications unless no longer needed and do not return the lands involved to operation of the mining laws.

6.6.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to leasable coal activities are listed below.

<u>*Canada Lynx*</u>

- The BLM shall limit disturbance in each LAU to 30 percent of the suitable habitat within the LAU. If 30 percent of the habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of management activities. The BLM shall map oil and gas production and transmission facilities, mining activities and facilities, dams, timber harvest, and agricultural lands on public lands and evaluate projects on adjacent private lands to assess cumulative effects. This will involve interagency coordination where LAUs cross administrative boundaries, primarily with the United States Forest Service.

<u>*Grizzly Bear*</u>

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.

- The BLM shall ensure that operation plans and special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. All temporary living facilities under temporary use permits in occupied grizzly bear habitat will be required to practice proper food storage and keep all potential attractants stored so they are unavailable to bears. Edibles and/or garbage will be secured from access by grizzly bears. Bear proof refuse containers, and timely refuse collection to prevent overflow, shall be required.
- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.

Ute Ladies'-tresses

- Portions of the authorized use area are known or suspected to be essential habitat for threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of this species. In the event that an occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

6.6.3. Best Management Practices

The BMPs identified under Locatable Minerals (Section 6.5.3) would also apply to Leasable Minerals – Coal. In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.6.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Effects Determinations – There are no exploration licenses or leases issued for federally administered coal in the Planning Area and the BLM does not anticipate reasonable foreseeable coal exploration, leasing, or development during the planning cycle. Therefore, coal leasing management actions will have *no effect (NE)* on any threatened or endangered species in the Planning Area. If interest in coal leasing on BLM-administered lands does occur, an environmental assessment or environmental impact statement will be prepared.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Coal mine operations occur on both state and private lands. These mines potentially remove habitats for lynx, and associated infrastructure may affect riparian habitats for Ute ladies'-tresses.

6.7. Leasable Minerals – Oil Shale

Oil shale is considered a leasable solid mineral under the Mineral Leasing Act of 1920. The BLM manages oil shale leasing, research and development leasing, and production, and performs other administrative duties related to oil shale production from federal lands in the western United States.

The BLM anticipates the potential for oil shale exploration and development activity would be low for the next planning cycle because of the relative thinness of oil shale beds, thickness of overburden, and poor quality of oil shale in the Planning Area. In 2008, the BLM released *Programmatic Environmental Impact Statement (EIS) for Oil Shale and Tar Sands* (BLM 2009d) that amended existing Resource Management Plans (RMPs) in Wyoming and other states. The only areas of Wyoming addressed in the Programmatic EIS were the Washakie and Green River Basins in the southwestern part of the state. The Programmatic EIS did not include the Bighorn Basin because oil shale resources in the Bighorn Basin are not considered economically feasible to produce. Oil shale exploration, development, and leasing in the Planning Area would require additional evaluation and an RMP amendment.

The BLM did not consider oil shale leasing and development under the Proposed RMP due to the absence of known, commercially exploitable resources and lack of anticipated leasing and development.

6.7.1. Proposed Management Actions for Leasable Oil Shale under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not propose management actions for leasable oil shale that benefit threatened and endangered species.

6.7.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). The conservation measures identified under Locatable Minerals (Section 6.5.2) would also apply to Leasable Minerals – Oil Shale.

6.7.3. Best Management Practices

The BMPs identified under Locatable Minerals (Section 6.5.3) would also apply to Leasable Minerals – Oil Shale. In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.7.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Effects Determinations – There are no oil shale leases or planned development in the Planning Area. The Proposed RMP did not consider oil shale leasing and development due to the absence of known, commercially exploitable resources and the lack of anticipated leasing and development in the Planning

Area. Therefore, oil shale leasing management actions will have *no effect (NE)* on any threatened or endangered species in the Planning Area.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Oil shale operations may occur on both state and private lands. These operations may potentially remove or degrade habitats for lynx, and associated infrastructure may affect riparian habitats for Ute ladies'-tresses.

6.8. Leasable Minerals – Geothermal

Geothermal resources are underground reservoirs of hot water or steam created by heat from Earth's interior. Geothermal steam and hot water are naturally discharged at the Earth's surface in the form of hot springs, geysers, mud pots, and steam vents. As an energy source, geothermal resources of hot water or steam are extracted and supplied to steam turbines that generate electrical energy. Geothermal resources also include subsurface areas of hot, dry rock (BLM and USFS 2008). The BLM field offices in the Bighorn Basin are responsible for supervising and managing all exploration, development, and production operations on any federal geothermal leases in the Planning Area.

There are three geothermal areas in the Planning Area, although none is considered viable for use to generate electricity (with current technology and market conditions), and the BLM has not issued federal geothermal leases (BLM 2008b). The Final Programmatic EIS for Geothermal Resources in the Western United States (BLM and USFS 2008) describes the Bighorn Basin as having "potential" for geothermal resource development. The BLM is aware of a low to moderate potential for some level of interest in Bighorn Basin geothermal resources over the next 10 to 20 years. Should geothermal leasing begin in the Bighorn Basin at some level, the Cody Field Office (CYFO) and Worland Field Office (WFO) may be able to accommodate some geothermal resource development over the next planning cycle (BLM 2009b). The BLM would work carefully to ensure that interests in geothermal development in the Bighorn Basin would not adversely affect the geothermal resource at Thermopolis.

The USGS has not identified any conventional (hydrothermal) geothermal resources in the Planning Area capable of generating electricity (USGS 2008). In addition, the USGS reports geothermal resource occurrence as low for the entire Planning Area, with the exception of the thermal springs near Thermopolis, which the USGS ranks as moderately low. Most likely geothermal resources will not generally be associated with the energy sector, rather it will likely be restricted to municipalities, and therefore will create little to no impact to lands beyond those associated with the structures they are designed to heat (BLM 2009e). A total of 363,675 acres are closed to geothermal leasing. A total of 3,839,538 acres are open to geothermal leasing.

6.8.1. Proposed Management Actions for Leasable Geothermal under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for leasable geothermal resources that benefit threatened and endangered species:

- BLM-administered land in the Planning Area that is open to oil and gas leasing is open to geothermal leasing, subject to appropriate mitigation developed through use of the mitigation guidelines. Unless otherwise noted, those lands identified as closed for oil and gas leasing are closed for geothermal leasing.
- The exploration and development of geothermal resources are subject to restrictions on surface-disturbing activities as they are applied to oil and gas exploration and development activities.

6.8.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). The conservation measures identified under Leasable Minerals – Oil and Gas (Section 6.9.2) would also apply to Leasable Minerals - Geothermal.

6.8.3. Best Management Practices

The BMPs identified under Locatable Minerals (Section 6.5.3) would also apply to Leasable Minerals – Geothermal. In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.8.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Effects Determinations – There are no federal geothermal leases in the Planning Area. The geothermal reasonable foreseeable development did not identify any geothermal resources within the Planning Area with sufficiently high temperatures to generate electricity (BLM 2009e). Therefore, geothermal leasing management actions will have *no effect (NE)* on any threatened or endangered species in the Planning Area.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Due to the lack of suitable geothermal resources in the Planning Area, no cumulative effects from geothermal management on nonfederal lands are anticipated for threatened, endangered, or proposed species.

6.9. Leasable Minerals – Oil and Gas

The Mineral Leasing Act of 1920 provides that all public lands are open to oil and gas leasing unless specifically designated by public law. Under the Proposed RMP, 911,814 acres of federal mineral estate are open to oil and gas leasing consideration with standard constraints; 1,714,685 acres are open with moderate constraints; 1,221,142 acres are open with major constraints; and 292,353 acres are closed for oil and gas leasing for the life of the plan.

The BLM is responsible for authorizing and administering geophysical exploration operations on all public surface lands, and under the rights granted under all federal oil and gas leases unless the USFS administers the surface (whether or not such leases are under non-federally managed surface) in the Planning Area. The Wyoming Oil and Gas Conservation Commission (WOGCC) is responsible for authorizing all operations on state and private surface land in instances where such operations are not covered by rights granted under federal oil and gas leases. The BLM authorizes geophysical exploration under a federal oil and gas lease via Sundry Notice approval. At the leasing stage, the BLM applies appropriate stipulations on federal oil and gas leases, including standard oil and gas stipulations, and special stipulations identified in the RMP. After acquiring an oil and gas lease, and prior to development, an application for permit to drill must be filed with the WOGCC and the appropriate BLM field office if the well is on a federal oil and gas lease in the Planning Area. After the BLM approves the permit, the company may proceed with drilling according to the conditions of the permit's approval.

Oil and gas reservoirs can be discovered by direct or indirect exploration methods. Direct methods include mapping of surface geology, observing seeps, and gathering information on hydrocarbon observed in drilling wells. Indirect methods often use geophysical methods such as gravity and magnetic and seismic surveys to delineate subsurface features that might contain oil and gas resources not directly observable. The petroleum industry utilizes 2D and 3D seismic technology to obtain subsurface stratigraphic and structural information useful for exploration of oil and gas reserves. 2D seismic technology uses explosives in drilled shot holes for source points along linear survey lines. 3D seismic techniques generally use source points such as vibroseis or shaker trucks in a grid pattern over a large area that can cover hundreds of square miles. Seismic operations use existing roads when feasible, but also require off-road travel.

There have been 9,928 surface well locations spudded (started) in the Planning Area through March 3, 2009 (WOGCC 2009). Of the 9,928 wells spudded or drilled in the Planning Area, 6,133 wells, or 61.8 percent, have been on BLM-administered mineral estate. Twenty-five wells (0.25%) have been drilled on USFS-managed lands. An additional 3,770 wells (38%) have been drilled on private and state-owned oil and gas mineral ownership. At the close of 2008, there were 4,544 active oil and gas wells in the Planning Area (BLM 2009c).

Coalbed natural gas (CBNG) occurs in coal seams and may remain trapped where it was generated. The Bighorn Basin coalfield contains only minor amounts of coal compared to other Wyoming coal basins and is therefore not considered an important source of CBNG. Fourteen CBNG wells have been drilled in the Planning Area on lands with privately owned surface and minerals; 13 of those have been plugged. The remaining well is currently shut-in (IHS Energy Group 2009). No CBNG has actually been produced from any of the wells drilled in the Planning Area.

Surface-disturbing and other activities associated with oil and gas exploration and development include, but are not limited to constructing and reclaiming well pads, access roads, and reserve pits; applying dust-control measures; controlling or limiting emissions; constructing reservoirs associated with water disposal; constructing compressor stations, product enhancements, and disposal facilities; building

pipelines associated with leases or units; installing powerlines associated with leases or units; and conducting geophysical exploration.

6.9.1. Proposed Management Actions for Leasable Oil and Gas under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for leasable oil and gas resources that benefit threatened and endangered species:

- Protect important habitats, including in areas unavailable to leasing on existing leases to the extent this restriction does not violate the leaseholder/operator lease rights, by applying a no surface occupancy (NSO) restriction and prohibiting surface-disturbing activities.
- In areas identified as available for leasing, additional planning, analysis, and decision making (see Appendix Y) may be necessary prior to lease issuance under the following criteria: 1) when oil and gas development is resulting in unacceptable multiple-use or natural/cultural resources conflicts, 2) new information evidences increased oil and gas development densities or surface disturbance, or 3) at the discretion of the Field Manager, District Manager, or State Director. Areas closed for oil and gas leasing may be leased with a NSO stipulation to deal with drainage of these resources from federal mineral estate.
- Determine the routing of access roads and location of well pads in conjunction with the surface owner on split-estate lands (private surface-federal minerals/oil and gas), where possible.

6.9.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to oil and gas resources are listed below.

Canada Lynx

- If activities are proposed in lynx habitat, the BLM shall ensure that stipulations and COAs for limitations on the timing of activities and surface use and occupancy are developed at the leasing and Notice of Staking/Application for Permit to Drill (APD) stages. For example, requiring that activities not be conducted at night, when lynx are active, and avoiding activity near denning habitat during the breeding season (April or May to July) to protect vulnerable kittens.
- The BLM shall ensure that snow compaction is minimized when authorizing and monitoring developments. The BLM shall encourage remote monitoring of sites that in lynx habitat so that they do not have to be visited daily.

Grizzly Bear

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.
- The BLM shall ensure that operation plans and special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. All temporary living facilities under temporary use permits in occupied grizzly bear habitat will be required to

practice proper food storage and keep all potential attractants stored so they are unavailable to bears. Edibles and/or garbage will be secured from access by grizzly bears. Bear proof refuse containers, and timely refuse collection to prevent overflow, shall be required.

- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.

Ute Ladies'-tresses

- No Surface Occupancy will be allowed within special management areas (e.g., known threatened or endangered species habitat).
- Portions of the authorized use area are known or suspected to be essential habitat for threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of this species. In the event that an occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).
- The BLM will apply a COA on all APDs oil and gas wells for sites within 0.25 miles of any known populations of the Ute ladies'-tresses. This condition will prohibit all authorized surface disturbance and OHV travel from sites containing populations of the Ute ladies'-tresses. Operations outside of the 0.25 mile buffer of Ute ladies'-tresses populations, such as "directional drilling" to reach oil or gas resources underneath the Ute ladies'-tresses habitat, would be acceptable.
- For known Ute ladies'-tresses populations, the BLM will place a Controlled Surface Use (CSU) stipulation prohibiting all surface disturbances on new oil and gas leases, buffering the area within 0.25 miles of known Ute ladies'-tresses populations. For existing oil and gas leases with known Ute ladies'-tresses populations (these would be for newly discovered populations not currently documented), the BLM will require the COA in conservation measure 19 above including the same 0.25 mile buffer area around those known Ute ladies'-tresses populations.
- All proposed rights-of-way projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Ute ladies'-tresses habitat to minimize disturbances. If avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the Service.

6.9.3. Best Management Practices

The BMPs identified under Locatable Minerals (Section 6.5.3) would also apply to Leasable Minerals – Oil and Gas. The Gold Book (BLM 2007a) provides oil and natural gas operators and the BLM guidance for ensuring compliance with agency policies and operating requirements including design standards, BMPs, stipulations, and other resource protection measures. The following BMPs from the Gold Book would benefit threatened, endangered, and proposed species by reducing impacts in suitable habitats that could result from oil and natural gas development and operation activities:

- Consider following natural topographic contours when selecting a location from new roads to preserve natural drainage patterns and reduce soil erosion.

- Divert storm water away from well locations with ditches, berms, or waterbars above the cut slopes and to trap well location runoff and on or near the location through the use of sediment fences or water retention ponds to reduce erosion.
- In areas of high environmental sensitivity as determined by BLM, special road location, design, and construction and maintenance techniques may be required, as well as seasonal vehicular closures to the general public.
- Cut slopes, fill slopes, and borrow ditches should be covered with topsoil and revegetated to restore habitat, forage, scenic resources, and to reduce soil erosion and maintenance costs.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.9.4. Impact Analysis and Effects Determination

In addition to the above management actions and conservation measures, the comprehensive list of conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Human activity associated with oil and gas development activity can cause Canada lynx to avoid or abandon habitats. In addition, construction of roads, pads, or other facilities may alter or destroy existing suitable foraging habitat or habitat linkages between suitable habitats. Increases in vehicular collisions with Canada lynx could occur due to increase in vehicular traffic associated with oil and gas exploration and development activities. Reasonable foreseeable actions in the Planning Area suggest that surface disturbance from oil and gas development is anticipated to occur on approximately 3,429 BLM-administered acres in the short-term and approximately 618 BLM-administered acres in the long-term. Implementing management actions associated with oil and gas development *may affect, but is not likely to adversely affect* Canada lynx due to *insignificant effects (NLAA-i)*. This determination is based on the minimal amount of disturbance anticipated from oil and gas development activities (less than 0.01% of the Planning Area), and the conservation measures in place to limit the timing of activities and surface use in Canada lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Human activity associated with oil and gas development activity can cause grizzly bear to avoid or abandon habitats. In addition, construction of roads, pads, or other facilities may alter or destroy existing suitable foraging habitat or habitat linkages between suitable habitats. Reasonable foreseeable actions in the Planning Area suggest that surface disturbance from oil and gas development is anticipated to occur on approximately 3,429 BLM-administered acres in the short-term and approximately 618 BLM-administered acres in the long-term. Implementing management actions associated with oil and gas development *may affect, but is not likely to adversely affect* grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the minimal amount of disturbance anticipated from oil and gas development activities (less than 0.01% of the Planning Area), the implementation of grizzly bear protection measures, and the unlikely event of these activities taking place in potential grizzly bear habitat.

North American Wolverine – Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing management actions associated with oil and gas development *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of potential oil and gas development in suitable wolverine habitat.

Ute Ladies'-tresses – No Ute ladies'-tresses populations are known to occur in the Planning Area. Oil and gas development in or near wetland/riparian areas may impact potential habitat for Ute ladies'-tresses through water diversion and channelization, soil erosion, stream bank degradation, and the spread of invasive species. However, prohibition of surface-disturbing activities at least within 500 feet and up to ¼ mile if needed to protect sensitive resources, waters of the state, perennial surface water, and riparian/wetland areas would reduce these effects. An NSO restriction on wetland areas greater than 20 acres would also reduce these effects. Implementing oil and gas development management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the current lack of known presence of the Ute ladies'-tresses from the Planning Area, the minimal surface disturbance anticipated from oil and gas development activities, and the unlikely event that oil and gas development would occur in or near potential Ute ladies'-tresses habitat.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Oil and gas development on private lands is expected to continue and there are opportunities for this activity on state and private mineral estate, potentially impacting threatened or endangered species.

6.10. Leasable Minerals – Other Solid Leasables

Other solid leasable minerals are those solid minerals, other than coal and oil shale, leased under the Mineral Leasing Act of 1920 and not related to energy production. Examples of other solid leasable minerals are phosphate, chloride minerals, sulfate minerals, carbonate minerals, silicate minerals, borate minerals, and other "hardrock minerals." Hardrock (locatable) minerals on acquired public lands open to mineral leasing can be developed only under a leasing system. Access to other solid leasable minerals on federal estate is at BLM discretion.

No other solid leasable minerals are currently leased or produced in the Planning Area. Other solid leasable minerals in the Bighorn Basin are not currently considered economically viable to produce (BLM 2009c). Future demand for other solid leasable minerals will likely increase over time in parts of Wyoming and the west, but this is not anticipated to result in any new leasing or production in the Planning Area (BLM 2009c).

6.10.1. Proposed Management Actions for Other Solid Leasable Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for other solid leasable mineral resources that benefit threatened and endangered species:

- On lands with an NSO restriction, allow only casual use geophysical exploration for solid leasable minerals unless otherwise specified. Surface-disturbance restrictions for geophysical exploration activities for other solid leasable minerals apply to both leased and unleased lands.
- Lease solid minerals such as phosphates or sodium, consistent with other resources, on a case-by-case basis.

6.10.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). The conservation measures identified under Locatable Minerals (Section 6.5.2) would also apply to Leasable Minerals – Other Solid Leasables.

6.10.3. Best Management Practices

The BMPs identified under Locatable Minerals (Section 6.5.3) would also apply to Leasable Minerals – Other Solid Leasables. In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.10.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Effects Determinations – There are no other solid minerals currently leased or produced in the Planning Area. Other solid leasable minerals are not considered economically viable to produce in the Planning Area. Future demand for other solid leasable minerals will likely increase over time in parts of Wyoming and the west, but this is not anticipated to result in any new leasing or production in the Planning Area. Therefore, other solid leasable minerals management actions will have *no effect (NE)* on any threatened or endangered species in the Planning Area.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Mineral development of other solid leasables on nonfederal lands in the Planning Area could adversely impact threatened or endangered species.

6.11. Salable Minerals

Salable minerals, also known as mineral materials, include common varieties of sand, stone (such as decorative stone), gravel, pumice, clay, rock and petrified wood. These non-energy-related materials are typically used in construction, agriculture, and decorative applications. Under the BLM mineral materials program (43 CFR 3600), the BLM manages exploration, development, and disposal of salable

minerals by sale (disposal) or free use. Recreational collection of this material is allowed, but large-volume removal requires a mineral sale. The BLM does not sell salable minerals at less than fair market value. Salable minerals in the Planning Area are an important component of the regional economy.

The Planning Area contains a variety of geological features and landforms that give rise to a diverse assortment of salable minerals. The primary salable minerals found in commercial quantities in the Planning Area are sand and gravel (aggregate), limestone, and decorative/construction stone (sandstone or limestone). Other salable minerals known to occur in the Planning Area in lesser quantities include flagstone and petrified wood.

Before issuing contracts or free use permits for salable minerals, the BLM conducts appropriate environmental assessments. These may include special studies or inventories of cultural values, threatened or endangered plant and wildlife species, or other resources. Stipulations or conditions may be included in the terms of the contract to ensure protection of the natural resource found there and reclamation of the land following project completion. Site reclamation is required following any surface-disturbing mining activity for common variety minerals. Reclamation includes removing all artificial debris, recontouring, reducing steep slopes, replacing topsoil, and seeding and planting vegetation. Under the Proposed RMP, 374,894 acres are closed to mineral materials disposal and 3,828,319 acres are open to mineral materials disposal. In the Planning Area, approximately 1,800 acres of short-term and 1,350 acres of long-term disturbance from salable mineral development are anticipated over the life of the plan.

6.11.1. Proposed Management Actions for Salable Minerals under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for salable mineral resources that benefit threatened and endangered species:

- Existing BLM-approved mineral materials sites are open to mineral materials disposal. New mineral materials disposal sites in areas open to mineral materials disposal are subject to site-specific analysis prior to approval.
- Ensure that each community pit has an updated site-specific reclamation fee based on a current mining and reclamation plan.
- Ensure that reclamation occurs in mined-out areas of community pits.
- Dispose of mineral materials on a case-by-case basis, subject to site-specific analysis and appropriate mitigation prior to approval, in areas open to mineral materials disposal.
- Prohibit disposal of topsoil.

6.11.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to salable minerals are listed below.

Ute Ladies'-tresses

- The disposal (sale and removal) of salable minerals is a discretionary BLM action and is prohibited within a 0.25 mile buffer area of known populations of Ute ladies'-tresses orchids.

6.11.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for salable minerals that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.11.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation committed to by the BLM is provided in Section 9.0.

Canada Lynx – Human activity associated with mineral development can cause Canada lynx to avoid or abandon habitats. In addition, construction of roads, pads, or other facilities may alter or destroy existing suitable foraging habitat or habitat linkages between suitable habitats. Increases in vehicular collisions with Canada lynx could occur due to increase in vehicular traffic associated with salable mineral development. Surface disturbance from salable mineral development is anticipated to occur on approximately 1,800 acres in the short-term and approximately 1,350 acres in the long-term. Implementing management actions associated with salable minerals *may affect, but is not likely to adversely affect* Canada lynx due to *insignificant effects (NLAA-i)*. This determination is based on the minimal amount of disturbance anticipated from salable development activities and the conservation measures in place to limit the timing of activities and surface use in Canada lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Human activity associated with salable mineral mining actions can cause grizzly bears to avoid or abandon habitats. In addition, construction of roads, pads, or other facilities may alter or destroy existing suitable foraging habitat or habitat linkages between suitable habitats. Surface disturbance from salable mineral activity is anticipated to occur on approximately 1,800 acres in the short-term and approximately 1,350 acres in the long-term. Conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementing management actions associated with salable minerals *may affect, but is not likely to adversely affect* grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the minimal amount of disturbance anticipated from salable mineral activities, the implementation of grizzly bear protection measures, including restrictions on timing of authorized activities and spatial considerations, and the unlikely event of these activities taking place in potential grizzly bear habitat.

North American Wolverine – Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing salable mineral management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of potential salable mineral development in potential wolverine habitat.

Ute Ladies'-tresses – No known populations of Ute ladies'-tresses occur in the Planning Area and no direct effects to this species are anticipated. Indirect effects to potential habitat may occur, including

spread of invasive species, increased human use in the area, and elevated dust levels. However, all federal actions and authorizations for potential impacts to special status plant species will be reviewed and avoidance and mitigation measure implemented. Implementing management actions associated with salable minerals *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the current lack of known occurrence of Ute ladies'-tresses within the Planning Area and the unlikely event of populations of Ute ladies'-tresses being discovered in areas with proposed salable minerals due to known sand and gravel deposits that generally occur on river terraces. Conservation measures for riparian/wetland areas would protect yet-to-be discovered populations.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Cumulative effects from salable resource operations along major river corridors or adjacent to other potential habitat for federally listed species on nonfederal lands could occur, which may impact these federally listed species through the loss of suitable habitat and behavioral impacts resulting from increased human presence as referenced in Appendix T.

6.12. Fire and Fuels Management – Wildfires (Unplanned Ignitions)

The BLM fire management program focuses on two categories of wildland fire – wildfires (unplanned ignitions) and prescribed fires (planned ignitions). A wildfire is one that burns outside the parameters defined in land use plans and Fire Management Plans (FMP) for that location under current and expected conditions. Unplanned ignitions include fires burning in areas where fire is specifically excluded; fires that exhibit burning characteristics (intensity, frequency, and seasonality) outside prescribed ranges, including fires expected to produce severe fire effects; unauthorized human-caused fires (e.g., arson, escaped camp fires, and equipment fires); and fires that occur during periods of high fire danger. Prescribed fire is used in a controlled manner for specific purposes, such as improving habitat and plant community health, and reducing hazardous fuels.

Within the Planning Area, the BLM manages wildfires and prescribed fires in accordance with the Northern Zone FMP (BLM 2004b). The Northern Zone FMP was prepared in response to the Federal Wildland Fire Management Policy of 2001, which directs BLM field offices to have an FMP for all areas with burnable vegetation, a program review in 1995, and the threats posed by current fuel loading in the Intermountain West. According to the Federal Wildland Fire Management Policy of 2001, an FMP 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 BLM Wyoming Northern Zone is in the Bighorn Basin Fire Planning Unit. The Bighorn Basin Fire Planning Unit consists of the Bighorn National Forest, Shoshone National Forest, Wind River Indian Reservation, and the Bighorn Canyon National Recreation Area (BLM 2004b). The BLM has interagency cooperative agreements with the agencies responsible for managing these areas. The Cody Interagency Dispatch Center coordinates fire suppression operations (BLM 2004b).

Fire suppression activities depend on the size and severity of the fire and the resources determined to be in danger. Fire management practices range from full fire suppression, to limited fire suppression, to areas designated for prescribed fires. Ground crews on site evaluate the fire and estimate the suppression requirements needed and arrive at the site by road, trail, or cross-country either by foot or by vehicle. Small fires may require hand and power tools (e.g., pulaskis, shovels, and chainsaws) and water from a pumper unit or backpack pumps. Larger fires may require additional personnel and equipment, including cutting trees, using mechanized equipment (e.g., bulldozers) to construct wider

fire lines, filling water pumper trucks from waterbodies, water drops from helicopter buckets, or air tanker drops of chemical retardant. A camp for personnel may be established in a safe location away from the fire and will be large enough to accommodate cooking facilities and equipment and supply areas. Following containment and control of the fire, the BLM may use rehabilitation techniques to stabilize the disturbed or burned area.

6.12.1. Proposed Management Actions for Wildfires under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for fire that benefit threatened and endangered species:

- Response to wildland fire may vary from full suppression in areas where fire is undesirable, to monitoring fire behavior in areas where fire can be used as a management tool.
- Utilize wildland fires (wildfires managed for resource benefit and prescribed fires) and other vegetation treatments to restore fire-adapted ecosystems, reduce hazardous fuels, and accomplish resource management objectives.
- Use mechanical, chemical, and biological treatments across the landscape as needed to restore vegetative diversity and reduce the risk of unnatural fire within those ecosystems.
- Ensure all prescribed burning activities comply with Wyoming DEQ air quality standards and smoke management rules.
- Implement the BLM Emergency Stabilization and Rehabilitation standards located in the U.S. Department of the Interior (DOI) Interagency Burned Area Emergency Response Guidebook and BLM Burned Area Emergency Stabilization and Rehabilitation Handbook.
- Base the response to wildfires consistent with objectives and the cost/benefits of the resources at risk.
- Restrict or prohibit the use of fire retardant chemicals as appropriate to protect water quality.
- Maintain an FMP consistent with the RMP to address fire management on a landscape scale and to meet Desired Plant Community objectives and resource management objectives.
- Protect facilities or habitable structures from fire.
- Cooperate with other agencies and landowners to conduct landscape treatments, resulting in enhanced fuels management and/or restoration of fire-adapted ecosystems.

6.12.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to wildfire management are listed below.

Canada Lynx

- Following a disturbance (blowdown, fire, insects) that could contribute to lynx denning habitat, the BLM shall allow no salvage harvest when the affected area is smaller than 5 acres. Some exceptions apply, as specified in the Lynx Conservation Assessment Strategy timber management project planning standards.

- In the event of a large wildfire, the BLM shall ensure that a post-disturbance assessment prior to salvage harvest is conducted, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
- The BLM shall ensure that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities and shall ensure revegetation of those that are necessary. Construction on ridges and saddles should be avoided if possible.

Grizzly Bear

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.

6.12.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for wildfire (unplanned ignitions) that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.12.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Wildfire management actions have the potential to occur in habitats occupied by lynx. Management activities that reduce habitat for snowshoe hares and/or red squirrels will adversely affect lynx. Wildfire management in the West has resulted in forests that are more homogeneous and composed of shade tolerant species with more canopy layers. As a result, current forests are more susceptible to severe fires, insects, and disease and result in impacts to lynx habitats. Temporary road construction associated with fire suppression or salvage harvest can lead to increased access into higher altitude sites by generalist predators such as coyotes, wolves, and bobcats (BLM 2005b). These species can be predators of and competitors with lynx (BLM 2005b). Conservation measures in place include ensuring a post-disturbance assessment prior to salvage harvest to evaluate potential for lynx denning and foraging habitat, ensuring that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities, ensuring revegetation as necessary, avoiding construction of roads and fire lanes ridges and saddles, and the protection of habitat linkages and connectivity. These measures and protections presented in the Bighorn Basin Proposed RMP will provide protection for lynx and their habitat. Implementing wildfire management actions *may affect, but are not likely to adversely affect* the lynx due to *insignificant effects (NLAA-i).* This determination is based on the conservation measures in place for the Canada lynx, including post-disturbance assessments to evaluate potential for lynx denning and foraging habitat, the avoidance of construction activities on ridges and saddles, and the protection of habitat linkages and connectivity. In addition, the USFWS will be contacted and emergency consultation will take place at the earliest possible time if LAUs or lynx habitats are affected by wildfire management.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Wildfire management actions have the potential to occur in habitats occupied by the grizzly bear. Road construction associated with fire suppression, if not revegetated, can lead to increased access into grizzly bear habitat by humans resulting in increased human/bear interactions, the main cause of mortality for grizzly bears (BLM 2006). Surface disturbance can also temporarily affect grizzly bear foraging by reducing potential future food sources including early successional shrubs (i.e., berries). Conservation measures in place that benefit the grizzly bear include ensuring that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities and ensuring revegetation as necessary. These measures and protections presented in the Proposed RMP will provide protection for grizzly bear and their habitat. Implementing wildfire management actions *may affect, but are not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i).* This determination is based on the low potential for activities associated with wildfire suppression to substantively reduce the potential for grizzly bears to utilize the landscape and find food and denning sites and the conservation measures in place to minimize impacts to the grizzly bear, including restrictions on timing of activity and spatial considerations for grizzly bears.

North American Wolverine – Wildfire management actions have the potential to occur in forest habitats that could support wolverines. Road construction associated with fire suppression may lead to increased access into higher altitude sites by generalist predators such as coyotes, wolves, and bobcats. These species can be predators of and competitors with wolverines (Inman et al. 2012). Although no conservation measures are currently in place specific to North American wolverines, measures identified for other species inhabiting high altitude forests (i.e., lynx and grizzly bear) could also potentially benefit wolverines. Wolverine occurrence in the Planning Area is unknown and there is limited suitable habitat in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing wildfire management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the potential for wildfire to occur within the limited suitable wolverine habitat in the Planning Area.

Ute Ladies'-tresses – Wildfire is not common in Ute ladies'-tresses habitats due to the presence of surface and subsurface water and the lack of significant fuel in these areas. Actions associated with wildfire suppression could destroy habitats and individuals; however, this type of impact is unlikely due to the rare occurrence of wildfire in these areas. Implementing wildfire management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event of wildfire occurring in Ute ladies'-tresses habitat.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. A buildup of hazardous fuels on private lands could increase the risk of wildland fire in the Planning Area, and therefore result in direct and indirect fire management-related impacts to threatened and endangered species and their habitats. Individuals may be displaced or killed and suitable habitats may be altered due to suppression activities. Indirect effects include the potential for wildland fire to improve some habitats for threatened and endangered species.

6.13. Fire and Fuels Management – Prescribed Fires (Planned Ignitions)

Prescribed fire is used in a controlled manner for specific purposes, such as improving habitat and plant community health, and reducing hazardous fuels. The BLM manages the fire program in the Planning Area to protect public safety, life, and property, and uses both wildland fire and fuels treatments. Fire and fuels treatments are management tools to maintain or increase age-class diversity within plant communities (e.g., big sagebrush/grassland); rejuvenate fire-dependent plant communities (e.g., aspen and ponderosa pine); maintain or increase vegetation productivity, nutrient content, and palatability; and maintain or improve wildlife habitat, rangeland, and watershed condition. Fire is also a management tool for disposing of timber slash, preparing seedbeds, reducing hazardous fuels, controlling disease or insects, improving rangeland health, managing livestock grazing, thinning, or manipulating species in support of forest management objectives.

Activities associated with prescribed fire include preparing the site for the burn by constructing firebreaks, reducing fuel loads, and piling the fuels to be purposefully burned. The BLM conducts prescribed burning under strict guidelines of temperature conditions, humidity, wind speed and direction to minimize the chance of the fire escaping.

6.13.1. Proposed Management Actions for Prescribed Fires under the Bighorn Basin Proposed RMP

Refer to the Wildfire section for management actions and conservation measures for prescribed fire that benefit threatened and endangered species.

6.13.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to planned ignitions are listed below.

<u>*Canada Lynx*</u>

- In the event of a large wildfire, the BLM shall ensure that a post-disturbance assessment prior to salvage harvest is conducted, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
- The BLM shall ensure that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities and shall ensure revegetation of those that are necessary. Construction on ridges and saddles should be avoided if possible.

6.13.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for prescribed fires (planned ignitions) that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.13.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Fire management actions, particularly actions associated with prescribed fire have the potential to occur in habitats occupied by lynx. Prescribed fire treatments have the potential to impact snowshoe hare and therefore lynx habitat. Conservation measures in place include the assessment of habitat in suitable and unsuitable condition and the ensuing limitations on percentage of disturbance allowable to habitat as specified in the Lynx Conservation Assessment Strategy (LCAS) (Ruediger et al. 2000). In addition, these measure and protections presented in the Proposed RMP will provide protection for lynx and their habitat and *may affect, but are not likely to adversely affect* the lynx due to *insignificant effects (NLAA-i).* This determination is based on the protective measures and BMPS in place to mitigate impacts to the lynx.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Prescribed fire management actions have the potential to occur in habitats occupied by the grizzly bear. Activities associated with prescribed fire include preparing the site for the burn by constructing firebreaks, reducing fuel loads, and piling the fuels to be burned. These human activities can lead to disturbances and potential displacement of the grizzly bear. Conservation measures in place, which benefit the grizzly bear include conducting the burn under strict guidelines of temperature conditions, humidity, and wind speed and direction to minimize the chance of the fire escaping. These measures and protections presented in the Proposed RMP will provide protection for grizzly bear and their habitat. In addition, restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, would be implemented to avoid or prevent significant disruption of normal or expected bear behavior and activity. Prescribed fire management actions *may affect, but are not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i).* This determination is based on the protective measures and BMPS in place to minimize impacts to the grizzly bear.

North American Wolverine – Fire management actions, particularly actions associated with prescribed fire have the potential to occur in suitable wolverine habitat. Activities associated with prescribed fire include preparing the site for the burn by constructing firebreaks, reducing fuel loads, and piling the fuels to be burned. Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing prescribed fire management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the low potential for prescribed fire management activities to occur within the limited suitable wolverine habitat in the Planning Area.

Ute Ladies'-tresses – Prescribed fire is not commonly used in Ute ladies'-tresses habitat due to the presence of surface and subsurface water and the lack of fuel in these areas. Actions associated with fire suppression could damage habitats; however, this type of impact is unlikely due to the implementation of conservation measures and best management practices that would ensure that prescribed fire activities are coordinated between biologists, rangeland management specialists, and fire personnel to ensure that no damage occurs to the plant habitat when being used to maintain the habitat for the species. Implementation of management actions in the RMP would require clearance

surveys in any suitable habitats prior to the approval of any activity planned in suitable habitat, including prescribed fire. Activities within known populations would not be permitted. Implementing prescribed fire management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event of prescribed fire use in Ute ladies'-tresses habitat.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Prescribed fire on nonfederal lands could reduce hazardous fuel loads and, therefore, the risk of catastrophic wildland fire, as well as improve habitat for threatened or endangered species. Such impacts are anticipated to be minimal.

6.14. Fire and Fuels Management – Stabilization and Rehabilitation

The BLM implements long-term rehabilitation measures to repair land damaged by wildfire that is unlikely to recover naturally. The BLM will implement rehabilitation measures for reasons such as preventing impacts to crucial fisheries habitat from erosion and sediment, preventing mass wasting onto private property, preventing the invasion of noxious weeds, and restoring a municipal watershed. Each Fire Management Unit in the Northern Zone FMP has stated general objectives for stabilization and rehabilitation (BLM 2004b).

Emergency stabilization and burned-area rehabilitation are part of a holistic approach to addressing post-wildland fire issues, which also includes repairing damage from suppression activities and long-term (more than 3 years) restoration. The incident management team begins the process by repairing damage from suppression activities. Emergency stabilization refers to Burned Area Emergency Response Team planned actions implemented within one year of wildfire containment to stabilize and prevent unacceptable degradation to natural and cultural resources; to minimize threats to life or property resulting from the effects of a fire; or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Burned-area rehabilitation refers to efforts undertaken within three years of wildfire containment to repair or improve fire-damaged lands unlikely to recover naturally to management-approved conditions, or to repair or replace minor facilities damaged by fire. These processes typically result with long-term restoration.

6.14.1. Proposed Management Actions for Stabilization and Rehabilitation under the Bighorn Basin Proposed RMP

Refer to the Wildfire section for management actions for stabilization and rehabilitation that benefit threatened and endangered species.

6.14.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to stabilization and rehabilitation are listed below.

Canada Lynx

- In the event of a large wildfire, the BLM shall ensure that a post-disturbance assessment prior to salvage harvest is conducted, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
- The BLM shall ensure that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities and shall ensure revegetation of those that are necessary. Construction on ridges and saddles should be avoided if possible.

6.14.3. Best Management Practices

The Proposed RMP proposes the following BMPs for fire stabilization and rehabilitation that benefit threatened and endangered species:

- The BLM undertakes stabilization and long-term rehabilitation actions to repair lands damaged by wildfire that are unlikely to recover naturally. Emergency stabilization and burned area rehabilitation are part of a holistic approach to address post-wildfire issues, including soil impacts, vegetation restoration, invasive species establishment and spread, and damage that can occur resulting from suppression activity and long-term (more than three years) restoration. Rehabilitation includes, but is not limited to, contour felling, mulching, seeding, and control of invasive plants.
- Emergency stabilization refers to planned actions performed by a Burned Area Emergency Response team within one year of containment of a wildfire to stabilize and prevent unacceptable degradation to natural and cultural resources. Burned area rehabilitation refers to efforts undertaken within three years of containment of a wildfire to repair or improve fire-damaged land unlikely to recover naturally to desired management conditions, or to repair or replace minor facilities damaged by fire. The spread of cheatgrass, in particular, is possible in areas burned or disturbed due to fire suppression activities. Widespread presence of cheatgrass can alter the local fire regime and fire-recurrence interval.
- There is no separate management under the Proposed RMP for stabilization and rehabilitation activities following a fire. The BLM would perform stabilization and rehabilitation consistent with the BLM Emergency Stabilization and Rehabilitation standards in the DOI Interagency Burned Area Emergency Response Guidebook (DOI 2006) and BLM Burned Area Emergency Stabilization and Rehabilitation Handbook (BLM 2007b).
- The BLM may carry forward the stabilization and rehabilitation activities and monitoring identified in the Northern Zone FMP.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.14.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation committed to by the BLM is provided in Section 9.0.

Canada Lynx – Stabilization and rehabilitation actions can occur in all forest types, including the mixed conifer/aspen and coniferous forest types suitable for lynx. Emergency stabilization and burned area

rehabilitation are part of a holistic approach to addressing post-wildland fire issues, which also includes repairing damage from suppression activities. The implementation of these stabilization and rehabilitation actions have the potential for short-term disturbance or displacement of lynx from human-caused disturbance. Short-term human-caused disturbance will not be avoided but implementing stabilization and rehabilitation actions will provide for long-term protection for the lynx and their habitat. Implementing stabilization and rehabilitation actions *may affect, but is not likely to adversely affect*, the lynx due to *insignificant effects (NLAA-i)*.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Stabilization and rehabilitation actions can occur in all forest types and habitats used by grizzly bear. Emergency stabilization and burned-area rehabilitation are part of a holistic approach to addressing post-wildland fire issues, which also includes repairing damage from suppression activities. Stabilization and rehabilitation management actions can reduce habitat quality and quantity for the grizzly bear, eliminate vegetative cover, or cause disturbance. Conservation measures such as, restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, would be implemented to avoid or prevent significant disruption of normal or expected bear behavior and activity. These measures will provide protection for the grizzly bear and their habitats. Implementing stabilization and rehabilitation management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i)*.

North American Wolverine – Stabilization and rehabilitation actions can occur in all forest types, including those used by wolverines. Emergency stabilization and burned-area rehabilitation are part of a holistic approach to addressing post-wildland fire issues, which also includes repairing damage from suppression activities. Stabilization and rehabilitation management actions can cause behavioral disturbance through avoidance while activities occur for the wolverine. Although the wolverine occurrence has not been documented, potential habitat is present in the Planning Area. Approximately 7,826 acres of BLM-administered lands occur at or above 9,500 feet within the range of the North American wolverine. These areas exist only along the western edge of the Bighorn Basin in the Absaroka and Owl Creek Mountain ranges. Implementing stabilization and rehabilitation management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of potential stabilization and rehabilitation actions in suitable wolverine habitat.

Ute Ladies'-tresses – No known populations of Ute ladies'-tresses orchid occur in the planning area. Actions associated with stabilization and rehabilitation could destroy habitats. However, because these activities are considered rare events in these habitats, this type of impact is unlikely to occur. Wildfire is not common in Ute ladies-tresses orchid habitats due to the presence of surface and subsurface water. Plants may be crushed while crews and vehicles access stabilization areas, however potential loss of habitat or individual plants would probably be extremely limited if the plant were to occur in the area at all. If the introduction or spread of noxious weeds occurred, it could adversely affect the orchid and its habitat. Suitable habitat areas typically do not burn frequently because of the presence of nearby surface and subsurface water, and the lack of significant fuel associated with orchid's habitat. For these reasons, prescribed burns are also not common in ULT habitat. Implementing stabilization and rehabilitation actions *may affect, but is not likely to adversely affect* the Ute ladies-tresses orchid due to *discountable effects (NLAA-d)*. This determination is based on the extremely limited potential for wildland fires to occur in habitat for the species and the same limited probability that equipment would be used in the orchid's habitat. If a wildland fire were to occur within any of the known habitat for the orchid and immediate suppression is required, as many conservation measures as possible will be

applied that do not hinder safety or property protection. The USFWS will be contacted and emergency consultation will take place at the earliest possible time if any known habitat for the orchid is affected or impacted.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Fire stabilization and rehabilitation on nonfederal lands could improve habitat for threatened or endangered species. Such impacts are anticipated to be minimal.

6.15. Forests, Woodlands, and Forest Products

Approximately nine percent of BLM-administered surface in the Planning Area is dominated by a combination forest and woodlands, which are comprised of juniper, limber pine, mixed conifer with aspen, and ponderosa pine. The BLM is responsible for implementing management to achieve desired goals for forests and woodlands.

Woodlands range from small uniform stands to larger mixed stands of aspen, limber pine, and Rocky Mountain juniper. Forests and woodlands are ecologically important and represent important wildlife habitat.

The western slope of the Big Horn Mountains in the WFO management area includes substantial mixed-age stands of ponderosa pine. These stands are generally confined to dryer sites. Douglas-fir, Engelmann spruce, sub-alpine fir, and lodgepole pine grow on north-facing slopes in both the Big Horn and Absaroka Mountains. Forestlands and woodlands found on Rattlesnake Mountain, the West Slope of the Big Horn Mountains, Carter Mountain, and on isolated public land parcels adjacent to Shoshone National Forest in the South and North Fork Shoshone River, Wood River, and Newmeyer Creek watersheds. Many of the aspen woodlands, willow, and cottonwood forests found at mid to high elevations are declining as succession from deciduous to conifer (typically juniper/ponderosa pine) dominance proceeds. Conifer species are replacing cottonwood-dominated and some willow-dominated riparian areas. The loss of deciduous forestland vegetation is affecting watershed, function and stability and diversity of habitat. This loss is human influenced due to fire suppression and the introduction of nonnative invasive species. Throughout the interior west, aspen are declining (Bartos 2001; Bartos and Campbell 1998; Rogers 2001). Older aspen stands are more susceptible to cankers, conks, and decays in the bole. Conifer succession is occurring in most aspen stands, which will likely result in further reductions in aspen presence. Barring any major surface disturbance (e.g., fire and mechanical treatment), conifers will eventually replace most of the aspen stands (Wyoming State Division of Forestry 2001).

The BLM manages its forest resources for community health, conservation, and diversity, and to provide for commercial and local forest product needs, while considering other resource values. Silviculture treatments could include thinning, clearcutting, shelterwood, seed tree cutting, improvement and salvage cutting, prescribed fire, chemical treatments, and planting or seeding. Surface disturbance and other actions associated with forest management include, but are not limited to timber harvesting, artificial regeneration, clearcutting, selective cutting, precommercial thinning, logging operations, road and landing construction, and removing diseased trees.

6.15.1. Proposed Management Actions for Forests, Woodlands, and Forest Products under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for forest, woodlands, and forest products that benefit threatened and endangered species:

- Plant conifer areas denuded by wildfire and harvesting with conifer species if they do not regenerate naturally within 15 years (and plant in managed or desired forest and woodland areas on a priority basis)
- Projects in old growth stands must fully maintain, or contribute to the restoration of the structure and composition of old growth stands according to pre-suppression old growth condition characteristics of the forest type, taking into account the contribution of the stand to landscape fire adaptation and watershed health, and retaining the large trees contributing to old growth structure. Identify old growth forest characteristics for the various forest types. Adopt connectivity of existing or potential old growth areas whenever feasible.
- Manage endemic insect and disease with the full range of silviculture techniques and treatment methods.
- Allow salvage of dead stands on a case-by-case basis with appropriate levels of snag retention.
- Allow precommercial thinning in overstocked areas and regenerated timber sale areas when trees reach the 10- to 20-year age class or when the regenerated trees are 5- to 15-feet tall.
- Assess the need to close existing and future timber access and haul roads on a case-by-case basis. Generally, close spur roads after completion of timber management.
- Perform woodland treatments primarily in aspen and juniper stands.
- Use logging, timbering, or wildland fire when appropriate to revitalize decadent stands and improve stand density.
- Manage conifer encroachment to improve wildlife habitat and forest health conditions.
- Within the areas classified as commercial forestland, conduct timber harvesting in a manner that protects and benefits watershed, wildlife, and riparian/wetland habitat values; emphasize areas where forest health is a primary concern.
- Use a variety of silvicultural practices and cutting methods, such as clear cutting, shelterwood, individual tree and group selection, and various regeneration treatments.
- In important seasonal wildlife habitat areas, generally restrict clear cuts to no more than 300 yards in any direction, unless a long-term benefit to wildlife habitat would result (generally restrict clear cuts to no more than 100 acres unless salvaging dead or dying timber).

6.15.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to forest, woodlands, and forest products are listed below.

<u>*Canada Lynx*</u>

- Following a disturbance (blowdown, fire, insects) that could contribute to lynx denning habitat, the BLM shall allow no salvage harvest when the affected area is smaller than 5 acres. Some

exceptions apply, as specified in the Lynx Conservation Assessment Strategy timber management project planning standards.

- The BLM shall only allow pre-commercial thinning when stands no longer provide snowshoe hare habitat.
- In aspen stands, the BLM shall ensure that harvest prescriptions apply that favor regeneration of aspen.
- The BLM shall ensure that improvement harvests (commercial thinning, selection, etc.) are designed to retain and improve recruitment of an understory of small diameter conifers and shrubs preferred by hares.
- The BLM shall ensure that livestock use in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components is not allowed. This regeneration may take three years or longer and will depend on site-specific conditions.
- The BLM shall ensure that grazing in aspen stands is managed to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones.

Grizzly Bear

- The BLM shall provide a packet of educational materials to authorized permittees in grizzly habitat, including, but not limited to, special recreation permittees, livestock permittees, and timber operators.
- The BLM shall not approve commercial cutting or other removal of whitebark pine in the six BLM administrative areas analyzed in this document in occupied or potential grizzly bear habitat.
- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.

6.15.3. Best Management Practices

The Wyoming Forestry Best Management Practices: Forestry BMPs Water Quality Protection Guidelines (http://slf-web.state.wy.us/forestry/bmp2.aspx) describes BMPs for the management of forest lands. These BMPs are a set of voluntary preferred methods of forestland management designed to protect water quality and forest soils, and are intended for use on non-industrial private, forest industry, state-owned, and federal forests. The BLM would implement these BMPs with regard to forests, woodlands, and forest products.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.15.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Forest management actions occur in all forest types, including the aspen and coniferous habitats used by lynx. Forest management can reduce habitat quality and quantity for lynx and their prey, and may reduce large woody debris, which may eliminate potential denning sites, reduce kitten survival, and reduce availability of snowshoe hares and red squirrels. Pre-commercial thinning has a direct adverse effect on hare habitats, at least in the short-term. Clearcutting, logging operations, road and landing construction, shearing, helicopter logging, and disease-treatment sprayings all have the potential to disturb lynx by eliminating lynx and hare habitats and cover, or by causing heavy disturbance in habitats used by lynx and their prey. Conservation measures from the LCAS and statewide programmatic BOs and BAs (Section 9.0) in place include restrictions on pre-commercial thinning, salvage, harvest prescriptions in aspen stands, improvement harvests, and the protection of linkages and connectivity. These measures will provide protection for lynx and their habitats. Implementing forest management actions *may affect, but is not likely to adversely affect* the lynx due to *insignificant effects (NLAA-i)*.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Forest management actions occur in all forest types used by the grizzly bear. Forest management can reduce habitat quality and quantity for grizzly bear. Pre-commercial thinning may disturb grizzly bear foraging in the short-term. Clearcutting, logging operations, road and landing construction, shearing, helicopter logging, and disease-treatment sprayings all have the potential to disturb the grizzly bear by eliminating habitat and cover. Conservation measures in place include restricting commercial cutting or other removal of whitebark pine in occupied or potential grizzly bear habitat. In addition, restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, would be implemented to avoid or prevent significant disruption of normal or expected bear behavior and activity. These measures will provide protection for grizzly bear and their habitats. Implementing forest management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i)*.

North American Wolverine – Actions associated with forests, woodlands, and forest products generally occur on forested lands. Wolverines inhabit boreal forests, where potential forest management actions could also occur, resulting in adverse impacts through habitat fragmentation and dispersal. However, few forested areas of BLM-administered lands overlap the wolverine's range within the Planning Area. Implementing forest management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of potential forest management actions in suitable wolverine habitat.

Ute Ladies'-tresses – The Ute ladies'-tresses is associated with riparian areas, which are not areas targeted for forest management. Potential Ute ladies'-tresses habitats are not expected to experience any effects from forest management actions. Implementing forest management actions has *no effect (NE)* on the Ute ladies'-tresses. This determination is based on the absence of forest management actions occurring in Ute ladies'-tresses potential habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Forest management on nonfederal lands could affect Canada lynx and their habitats. Road building in riparian areas may affect Ute ladies'-tresses potential habitats.

6.16. Grassland and Shrubland Communities

Approximately 86 percent of BLM-administered surface in the Planning Area is characterized as sagebrush shrublands and salt desert shrub/salt bottom shrub. Sagebrush shrublands in the Planning Area contain grassland components that are generally not large or contiguous enough to form distinct grassland communities at the landscape level; however, these grassland components increase habitat heterogeneity within localized areas. Shrublands dominate the Planning Area, representing approximately 2,727,491 acres of BLM-administered land and 3,465,745 acres of federal mineral estate (86% of all BLM-administered surface land or 83% of all federal mineral estate). These communities are generally diverse in plant composition and provide important forage and cover for wildlife and livestock. Shrublands are split into seven plant communities – mesic upland shrub, xeric upland shrub, mountain big sagebrush, Wyoming big sagebrush, desert shrub, saltbush fans and flats, and greasewood fans and flats.

Grassland components in the Planning Area are generally located in valley bottoms, uppermost south-facing slopes, and scattered patches on windswept ridges. Grasslands are split into four plant communities – mixed grass prairie, Great Basin foothills grassland, meadow tundra, and subalpine meadow – as described below. Field observations suggest that grasslands are not present as distinct vegetation communities in the Planning Area, but do occur as components within shrubland communities that influence overall habitat character.

The BLM manages grassland and shrubland communities in accordance with the Wyoming Standards for Healthy Rangelands. BLM actions associated with managing grassland and shrubland communities include using mechanical, chemical, biological methods, and livestock grazing to achieve objectives; conducting rangeland health evaluations; managing for sustainable levels of forage for livestock and habitat for wildlife; implementing guidelines on allotments that do not meet rangeland health standards; and conducting vegetation treatments.

6.16.1. Proposed Management Actions for Grassland and Shrubland Communities under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for grassland and shrubland communities that benefit threatened and endangered species:

- The appropriate functional structural plant groups must be present for the site. Potentially manage some areas at a lower level of ecological status to provide preferred habitat.
- Manage to maintain contiguous blocks of native plant communities and minimize fragmentation; allow for appropriate mosaic of interrelated plant communities while allowing for other resource uses.

6.16.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to grassland and shrubland communities are listed below.

Canada Lynx

- The BLM shall ensure that the potential importance of shrub-steppe habitats in the lynx habitat matrix and in providing landscape connectivity between blocks of lynx habitat is evaluated and considered as integral to overall lynx habitat where appropriate. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid-seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.

Ute Ladies'-tresses

- The BLM will ensure that upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.
- The BLM will ensure that rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.
- If revegetation projects are conducted within 0.25 miles of known habitat for the orchid, only native species will be selected. This conservation measure will reduce the possibility that nonnative species will be introduced and will compete with Ute ladies'-tresses orchid.

6.16.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for grassland and shrubland communities that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.16.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Grassland and shrubland communities are not the preferred habitat for the Canada lynx. Areas where grassland and shrubland management actions are implemented would be widespread throughout the Planning Area and impacts localized, therefore, affecting only a portion of the LAUs. As a result, lynx dispersals would not be expected to occur from management actions occurring in grassland and shrubland communities. Implementing grassland and shrubland management actions *may affect, but is not likely to adversely affect* the lynx due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event grassland and shrubland management actions will take place in potential lynx habitats and the existing conservation measures in place to protect the species.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Grassland and shrubland communities are not the primary habitat for the grizzly bear. Areas where grassland and shrubland management actions are implemented will be widespread throughout the Planning Area and therefore, affecting only a portion of the large territory occupied by the grizzly bear. Conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementing grassland and shrubland management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event that grassland and shrubland management actions will take place in occupied grizzly bear habitats and the existing conservation measures in place to protect the species.

North American Wolverine – Grassland and shrubland communities are not the preferred habitat for the wolverine. Areas where grassland and shrubland management actions are implemented would be widespread throughout the Planning Area and impacts localized, but would not affect the limited amount of suitable wolverine habitat occurring at high elevations. Implementing grassland and shrubland management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of overlap between grassland and shrubland management actions and potential wolverine habitat.

Ute Ladies'-tresses – Management actions of grassland and shrubland communities are not expected to adversely impact the Ute ladies'-tresses and may actually benefit habitat health. Implementation of management actions in the RMP would require clearance surveys in any suitable habitats prior to the approval of any activity planned in suitable habitat, including prescribed fire. Activities within known populations would not be permitted. Implementing grassland and shrubland management actions will have *no effect (NE)* on the Ute ladies'-tresses, as the species does not occur in these habitats. This determination is based on the existing conservation measures in place to protect individual plants and habitats, the current lack of known occurrence of this species within the Planning Area, and that this species does not occur in grassland and shrubland habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Management on nonfederal lands may add to disturbance of threatened and endangered species. Depending on the time of year actions are conducted, increased human presence and use of machinery may cause detrimental impacts to threatened and endangered species. If actions on BLM-administered and nonfederal lands occur during the same time period and in nearby locations, habitat for threatened and endangered species could be limited.

6.17. Riparian/Wetland Resources

Riparian ecosystems occupy the transition between upland and water ecosystems and include floodplains, stream banks, lake shores, and wetlands. They are some of the most productive resources found on public or private lands. They comprise less than 2 percent of the western landscape, yet are prized by communities for their recreational, fish and wildlife, water supply, cultural, and historic values, and for their economic values, which stem from use in livestock production and forest management (Cooperative Riparian Restoration Montana 2006).

Riparian/wetland sites in the Planning Area are described as lentic or lotic. Lentic refers to standing water such as in lakes, springs, and bogs. Lotic refers to flowing water such as rivers and streams.

Documented riparian/wetland areas in the Planning Area range from cottonwood galleries along major rivers, to wet meadows and seeps and narrow ribbons of willow/water birch, sedge, rush, and/or grass that run along small streams. Some of the surface water features that support riparian/wetland areas can be dry for long periods and experience wide variations in the frequency and magnitude of flood events. Native cottonwood galleries along riparian corridors provide habitat for neotropical migratory birds and owls and for white-tailed and mule deer. Many terrestrial wildlife species use more than one riparian habitat type, although some use only one or two.

Riparian/wetland areas in the Planning Area perform important ecological processes and functions such as water, energy, and nutrient cycling. Healthy riparian/wetland areas support stable banks and shorelines; floodplain maintenance; clean and stable water supplies; aquifer recharge; flood-energy dissipation and moderation; fish and wildlife habitat; livestock and wildlife forage; opportunities for recreation; carbon sequestration; and scenic values.

6.17.1. Proposed Management Actions for Riparian/Wetland Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for riparian/wetland resources that benefit threatened and endangered species:

- Manage all riparian/wetland areas to meet or make progress toward proper functioning condition, giving priority to areas that are functioning at risk with a downward trend or that are in non-functioning condition.
- Manage streams with unique recreational or aquatic values to obtain Desired Future Condition.
- Prohibit surface-disturbing activities within 500 feet of surface water and riparian/wetland areas except when such activities are necessary and when their impacts can be mitigated.
- Apply an NSO restriction on wetland areas larger than 20 acres and on designated 100-year floodplains.

6.17.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to riparian/wetland resources are listed below.

Canada Lynx

- Within lynx habitat, the BLM shall ensure that livestock grazing in riparian areas and willow patches is managed to maintain or achieve mid-seral or higher condition to provide cover and forage for prey species.
- In high-elevation riparian areas, especially those subject to grazing, the BLM shall ensure that weed assessments and weed control are conducted to optimize habitat for snowshoe hares.

Grizzly Bear

- The BLM shall require that the Proper Functioning Condition of existing aquatic systems and riparian zones in occupied grizzly bear habitat be maintained for all BLM-administered public

lands. If these areas are polluted and/or damaged from activities, lessee/permittee/ grantee or the BLM will be required to assume full responsibility for rehabilitation and restoration of such areas.

Ute Ladies'-tresses

- Surface disturbance will be prohibited within 500 feet of surface water and/or riparian areas.
- In any proposed new access, wetland and riparian areas will be avoided where possible.
- The BLM will manage stream habitats to retain, re-create, or mimic natural hydrology, water quality, and related vegetation dynamics. Projects that may alter natural hydrology or water quality, change the vegetation of the riparian ecosystem and cause direct ground disturbance will be evaluated and redesigned to ensure that adverse effects to populations of the Ute ladies'-tresses do not occur.

6.17.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for riparian and wetland resources that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.17.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Riparian/wetland management actions could occur in potential Canada lynx habitat, if at all, and would be short-term in nature. Access for these activities would be primarily by vehicle (pickup truck, etc.) and monitoring would be done by personnel walking into and along streams and rivers. Riparian habitat restoration to reduce erosion and sediment movement along watercourses may result in short-term disruption or displacement to resident lynx, but would have long-term benefits to the species. The activities associated with riparian/wetland management actions are infrequent, small in scale, and not likely to occur in lynx habitat. Implementing riparian/wetland resource management actions *may affect, but is not likely to adversely affect* the lynx due to *discountable effects (NLAA-d*). This determination is based on the conservation measures in place that will preclude adverse effects to the lynx, or LAUs.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Riparian/wetland management actions would occur in a portion of occupied grizzly bear habitat, and be short-term in nature. Access for these activities would be primarily by vehicle (pickup truck, etc.) and monitoring would be done by personnel walking into and along streams and rivers. Some disturbance to streams or rivers during construction and occasional maintenance of monitoring equipment may occur. Riparian habitat restoration to reduce erosion and sediment movement along watercourses may result in short-term disruption or displacement to resident grizzly bear, but would have long-term benefits to the species. Conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant

disruption of normal or expected bear behavior and activity. Implementing riparian/wetland resource management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d*). This determination is based on the conservation measures in place, and the likelihood of long-term improvement to grizzly bear habitat.

North American Wolverine – Riparian/wetland communities are not the preferred habitat for the wolverine. Areas where riparian/wetland resource management actions are implemented would be localized, but would not affect the limited amount of suitable wolverine habitat occurring at high elevations. Implementing riparian/wetland resource management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of overlap between riparian/wetland resource management actions and potential wolverine habitat.

Ute Ladies'-tresses – Riparian/wetland management actions will improve habitat for the Ute ladies'-tresses by maintaining or improving riparian or wetland habitat conditions, on which the species depends. Managing riparian/wetland areas to meet or make progress toward proper functioning condition, giving priority to areas that are functioning at risk with a downward trend or that are in non-functioning condition would improve Ute ladies'-tresses habitat. Implementation of management actions in the RMP would require clearance surveys in any suitable habitats prior to the approval of any activity planned in suitable habitat, including prescribed fire. Activities within known populations would not be permitted. Implementing riparian/wetland resource management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the potential for improvement of habitat, and the incorporation of conservation measures for the Ute ladies'-tresses.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Protection and enhancement of riparian/wetland resources on nonfederal land in the Planning Area will improve habitat for threatened and endangered species. Adverse impacts are not anticipated to occur to threatened and endangered species in the long-term.

6.18. Invasive Species and Pest Management

Invasive and noxious plant species are common impediments to management objectives in the Planning Area. Invasive species are, for the most part, nonnative species whose introduction into an environment where they did not evolve causes, or is likely to cause, economic or ecological harm. These species make efficient use of local natural resources difficult and often interfere with achieving management objectives for the site. Noxious species are species designated by federal, state (State of Wyoming Noxious Weed List), or county government (Weed Control Districts) as injurious to public health. Although noxious weeds are almost always nonnative, the Proposed RMP makes a distinction because noxious weeds can include undesirable native plants. A pest can be any biological life form that poses a threat to ecological health and welfare.

Invasive species are controlled on BLM-administered lands through cooperative agreements with the Big Horn County, Hot Springs County, Park County, and Washakie County Weed and Pest Control Districts and USDA APHIS. In addition to the county weed and pest control districts, both field offices work in cooperation with the Wyoming Game and Fish Department (WGFD), State Lands Division, State Parks, local Natural Resources Conservation Service (NRCS) offices, and private landowners. Invasive species are an increasing problem in the Planning Area and are affecting water and other resources.

Both the CYFO and WFO are targeting plants that are designated on the State of Wyoming Noxious Weed List or declared on the county noxious weed lists. The primary species targeted on public lands

include cheatgrass, Russian knapweed, spotted knapweed, diffuse knapweed, leafy spurge, Dalmatian toadflax, Canada thistle, scotch thistle, musk thistle, houndstongue, hoary cress (whitetop), field bindweed, puncture vine, Russian olive, and Tamarisk. These plants are typically found in sagebrush/grassland, desert shrub, and riparian/wetland community types. The present goal is to contain and reduce densities of invasive species populations.

The CYFO and WFO treat approximately 2,500 acres of invasive-species-infested areas annually. Based on observations and reports from Weed Control Districts, treatment efforts appear to be keeping invasive plant species populations from continued rapid spread, but are not necessarily reducing existing populations. The BLM manages invasive species in the Planning Area in nine weed management areas and two Coordinated Resource Management areas for weeds. Most of the species the BLM targets for management have not invaded BLM-administered lands in the Planning Area; however, invasive species that have invaded BLM-administered lands are expanding their range (BLM 2009b). The goal is to contain and reduce densities of known invasive species populations.

In February 2003, the USDA Animal and Plant Health Inspection Service (APHIS) and the BLM signed a Memorandum of Understanding (MOU) detailing cooperative efforts to suppress grasshoppers and Mormon crickets on BLM-administered lands (APHIS 2003). This MOU clarifies that APHIS will prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper and Mormon cricket populations. The BLM must also approve a Pesticide Use Proposal (Form FS-2100-2) for APHIS to treat infestations. APHIS would begin treatments after environmental review and BLM approval of the Pesticide Use Proposal.

Wyoming-designated pests under Wyoming Statute 11-5-102(a) (xii) include grasshoppers, Mormon crickets, prairie dogs, ground squirrels, mountain bark beetle, and beet leafhopper. The protocol for treating grasshoppers and Mormon crickets is by Reduced Agent Area Treatments (RAATs). RAATs are a grasshopper suppression method in which the rate of insecticide is reduced from conventional levels, and treated swaths are alternated with swaths that are not directly treated. The RAATs strategy relies on the effects of an insecticide to suppress grasshoppers within treated areas while conserving grasshopper predators and parasites in areas not directly treated.

6.18.1. Proposed Management Actions for Invasive Species and Pest Management under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for invasive species that benefit threatened and endangered species:

- Allow aerial application of pesticides on a case-by-case basis in coordination with the authorized officer.
- Require livestock flushing on a case-by-case basis.

6.18.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to invasive species and pest management are listed below.

Ute Ladies'-tresses

- The BLM will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Ute ladies'-tresses populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Ute ladies'-tresses populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Ute ladies'-tresses populations and potential overgrazing of the areas occupied by the species. Surveys for Ute ladies'-tresses will be conducted in potential Ute ladies'-tresses prior to livestock operations related construction projects.
- Biological control of noxious plant species will be prohibited within 1.0 mile from known Ute ladies'-tresses habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The BLM will monitor biological control vectors.
- Except in cases of extreme ecological health (insect or weed outbreaks, infestations), herbicide treatment of noxious plants/weeds will be well-regulated within 0.25 miles of known populations of the Ute ladies'-tresses and insecticide/pesticide treatments will be well regulated within 1.0 mile of known populations of the orchid to protect pollinators.
- Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above the following will apply: where needed and only on a case-by-case basis, a pesticide use proposal or other site specific plan will address concerns of proper timing, methods of use, and chemicals. Pesticides specifics to dicots will be preferred where these are adequate to control the noxious weeds present.
- Aerial application of herbicides will be carefully planned to prevent drift in areas near known populations of the Ute ladies'-tresses (outside of the 0.25 mile buffer). The BLM will work with the Animal and Plant Health Inspection Service (APHIS), the USFWS, and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect the orchid.

Canada Lynx

- In high-elevation riparian areas, especially those subject to grazing, the BLM shall ensure that weed assessments and weed control are conducted to optimize habitat for snowshoe hares.

6.18.3. Best Management Practices

To prevent the spread of aquatic invasive species, the WGFD recommends following the guidelines outlined in the *Aquatic Invasive Species in Wyoming* brochure (http://gf.state.wy.us/fish/AIS/index.asp).

Specific BMPs to prevent the spread of aquatic invasive species include, but are not limited to:

- Decontamination should first occur before arrival at a project site, so aquatic invasive species are not transferred from the last visited area. Decontamination should occur again before leaving a project site, so aquatic invasive species are not transferred to the next site.
- Decontamination may consist of either:
  - Drain all water from equipment and compartments, clean equipment of all mud, plants, debris, or animals, and dry equipment for 5 days in summer (June, July, and August); 10 days in spring (March, April, and May) and fall (September, October, and November); or 3 days in winter (December, January, and February) when temperatures are at or below freezing, or
  - Use a high pressure (2,500 pounds per square inch) hot water (140 degrees Fahrenheit) pressure washer to thoroughly wash equipment and flush all compartments that may hold water.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.18.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Control of invasive species on BLM-administered lands could improve and or maintain lynx habitats. Implementing invasive species management actions ultimately improves habitat quality and quantity for lynx. Identifying and prioritizing areas for treatment and management activities that contribute to the establishment of weed infestations ultimately benefit habitat for Canada lynx. Disturbance limitations in Canada lynx habitat would benefit this species by minimizing the potential spread or introduction of invasive species. In high-elevation riparian areas, the BLM will ensure that weed assessments and weed control are conducted to optimize habitat for snowshoe hares. Implementing invasive species management actions may affect, but is not likely to adversely affect the lynx due to discountable effects (NLAA-d). This determination is based on invasive species management actions improving habitat for lynx and the conservation measures in place to limit disturbance in lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Control of invasive species on BLM-administered lands could improve habitats for the grizzly bear. Implementing invasive species management actions ultimately improve habitat quality and quantity for the grizzly bear habitat. Identifying and prioritizing areas for treatment and management activities that contribute to the establishment of weed infestations ultimately benefit habitat for grizzly bear. The conservation measure that restrict the timing of activity and spatial considerations for grizzly bears will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area would also minimize adverse impacts to this species. Implementing invasive species management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the conservation measures in place to protect this species.

North American Wolverine – Invasive species management on BLM-administered lands occurs through cooperative agreements with the counties and Pest Control Districts. In addition, both field offices in the Planning Area work in cooperation with the WGFD, State Lands Division, State Parks, local NRCS offices, and private landowners to address invasive species. Following aerial application of pesticides on a case-by-case basis in coordination with the authorized officer may indirectly and temporarily impact the wolverine, but there is a long-term benefit of habitat improvement. Implementing invasive species management actions ultimately improve habitat quality and quantity for the wolverine habitat. Implementing invasive species management actions *is not likely to jeopardize (NJ)* the North American wolverine.

Ute Ladies'-tresses – No known populations of the Ute ladies'-tresses orchid are known to occur in the planning area. The BLM employs biological, chemical, and mechanical actions to manage invasive species. Invasive species control measures would be limited in suitable habitat for the orchid. Application of herbicides that could potentially harm the orchid would not be utilized within 0.25 mi of known populations. Aerial herbicide applications, outside of the 0.25 mile buffer, will be carefully planned to prevent drift. Narrow spectrum herbicides are herbicides designed to target specific weeds and applied in accordance with label-specific conditions and therefore would not affect the Ute ladies'-tresses orchid. Clearance surveys would be required prior to application of any treatments in suitable habitats. The BLM would consult with the USFWS on proposed herbicide use within suitable orchid habitat. If either the BLM or the Service has any concerns that the orchid could be adversely affected, then the treatment would be redesigned to avoid the impact or would not be authorized except in cases of extreme ecological health concern. In areas where habitats are unsuitable for the Ute ladies'-tresses orchid because of invasive species, invasive species control measures may benefit the Ute ladies'-tresses orchid by improving those habitats. Implementing invasive species and pest control management actions may affect, not likely to adversely affect the Ute ladies'-tresses orchid due to discountable effects (NLAA-d). This determination is based on the pesticide use restrictions, the conservation measures for the Ute ladies'-tresses orchid, the current absence of the species within the planning area, and the limited potential habitat.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Surface-disturbing activities and soil disturbance contribute to the spread of invasive species. While much of the surface disturbance from non-BLM actions is anticipated to be reclaimed, the potential for spread of invasive species remains from both short-term and long-term impacts. Surface disturbance is anticipated to continue on nonfederal lands. The spread of invasive species could affect threatened and endangered species habitats, making them unsuitable. The long-term effectiveness of invasive species control measures on all public and private lands in the Planning Area depends on continued cooperation, available funding, agency priorities, and the effectiveness and periodic assessment of weed-management actions in accordance with a comprehensive weed management plan. Unchecked invasive species could overwhelm attempts at control and substantially impact fire and fuels management, biological resources, livestock grazing management (by reducing rangeland productivity and animal unit months [AUMs]), and recreation (by impacting wildlife habitats and scenic quality) throughout the Planning Area.

6.19. Fish and Wildlife Resources

The BLM is responsible for managing fisheries and wildlife habitats, and state and federal wildlife management agencies oversee BLM management activities. Fisheries habitat includes perennial and intermittent streams, lakes, and reservoirs that support fish through at least a portion of the year. Drainages in the Planning Area that provide fisheries habitat, including the Bighorn River, Wind River,

Clarks Fork of the Yellowstone River, and their associated tributaries, including the Nowood, Greybull, and Shoshone river systems. Aquatic habitat varies by vegetation type, water quality and quantity, land use, and landscape setting within these drainages and their tributaries. The USFWS provides regulatory oversight for all species listed, proposed for listing, or candidates for listing under the ESA. The USFWS also administers the Migratory Bird Treaty Act (MBTA), which protects migratory bird species whether they are hunted (as with waterfowl) or not (as with songbirds). Pursuant to Executive Order 13186 (66 FR 3853 [*Responsibilities of Federal Agencies to Protect Migratory Birds*]), the BLM and USFWS have entered into a MOU to promote the conservation of migratory birds (DOI 2010). The purpose of the MOU is to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the BLM and the USFWS. Management Actions of the Proposed RMP that would promote the protection and conservation of migratory birds are listed in this section.

Table 2 summarizes the name and management focus of habitat management plans (HMPs) for the Planning Area. The goal of the HMPs is habitat protection and improvement for all wildlife and fisheries; some HMPs focus on particular wildlife groups, such as waterfowl and upland game.

Table 2. Habitat Management Plans for the Bighorn Basin Planning Area

Plan	Year
Absaroka Front Habitat Management Plan (BLM 1986a)	1986
Bighorn River Habitat and Recreation Management Plan (BLM 1987)	1978 (updated 1986)
West Slope Habitat Management Plan (BLM 1984b)	1984

Source: BLM 2009b

Fish

The BLM manages fish habitats according to laws, regulations, BLM policies, and principles of fisheries management in the BLM multiple-use mandate. State and federal game management agencies oversee aquatic species, to the extent they are directly managed. The WGFD is responsible for regulating the sport and commercial take of all fish in the Planning Area. The USFWS has oversight responsibility for federally threatened or endangered species. There are no federally listed fish species in the Bighorn Basin. However, the BLM directly manages habitat that supports game and nongame fish species where there is such habitat on BLM-administered lands, and BLM management indirectly affects all aquatic species upstream and downstream of BLM-administered lands. The BLM manages wildlife habitat in the Planning Area according to a number of HMPs. Although there are no specific HMPs for fish species, actions in existing HMPs that improve riparian habitat often improve habitat for fish species.

Within the Planning Area, BLM-administered lands contain fisheries resources that include cold-water streams draining the Big Horn Mountains to the east and the Absaroka Range to the west; the tail-water trout fishery at Thermopolis; the cool-water fishery of the lower Bighorn, Shoshone, Greybull, and Nowood rivers; and the warm-water fisheries of several small lakes or ponds. There are no natural lakes or ponds in the Bighorn Basin that support fisheries.

Fisheries in the Bighorn Basin occur in the Bighorn River and Clarks Fork of the Yellowstone watersheds and include several major perennial tributaries – Owl Creek, Cottonwood Creek, Grass Creek, Gooseberry Creek, Greybull River, Wood River, Shoshone River, Kirby Creek, Nowater Creek, Nowood

River, Shell Creek, Porcupine Creek, and Dry Creek. Most fish populations occur in the larger rivers and their tributaries, although there are several WGFD-stocked reservoirs and ponds.

Wildlife

There is a diversity of wildlife habitats in the Planning Area, primarily because of its location between three physiographic areas – the Northern Shortgrass Prairie to the north and east, the Central Rocky Mountains to the west, and the Wyoming Basin to the south of and including the Planning Area. In addition, the Bighorn Basin is a basin bounded by mountains that affect floral and faunal distribution, which also defines the diversity of habitats and species in the Bighorn Basin.

Lands in the Planning Area contain a variety of habitats that possess the biological and physical attributes important in the life-cycles of many wildlife species. The diversity of habitats and landscapes provide important areas for breeding, birthing, foraging, wintering, and migration. Wildlife habitat is best characterized by vegetation types, water resources, geology, and topography. Vegetation types are characterized as successional stages, commonly influenced by disturbance regimes like fire, grazing, and drought. Just as a diversity of vegetation types is important to wildlife, so are these successional stages within types. Habitats in the Planning Area include sagebrush-steppe shrublands, coniferous forests, juniper woodlands, aspen stands, mountain shrub, canyons and rim rock, badlands, grasslands, and riparian/wetland areas.

Factors such as fire, forestry, ROWs, livestock grazing management, and motorized vehicle use and other recreation also influence the quality of habitat, as do management actions applied throughout BLM-administered lands. It also is noteworthy that many wildlife populations spend considerable time on non-BLM-administered lands and these populations often depend to a great extent on, and are therefore affected by, management of these non-BLM-administered lands. Most wildlife species utilize vegetation on the basis of its structure (height and spacing) and the growth form (gross morphology and growth aspect) of the predominant species. Therefore, mapping vegetation zones and successional stages characterizes wildlife habitat in general terms. The BLM manages wildlife habitat in the Planning Area according to a number of HMPs and habitat management recommendations provided through the WGFD *Strategic Habitat Plan* (WGFD 2001).

6.19.1. Proposed Management Actions for Fish and Wildlife Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for fish and wildlife resources that benefit threatened and endangered species:

- Coordinate with WGFD to design reservoirs with consideration of fish and wildlife habitat values.
- Manage intermittent streams judged as having potential to become, or return to being, perennial streams with fish on a watershed scale to acquire perennial flow values in compliance with Wyoming water laws.
- Avoid surface-disturbing activities within ¼ mile of any waters rated by the WGFD as Blue Ribbon or Red Ribbon (trout streams of national or state-wide importance).
- Manage fisheries habitat to improve and enhance its value through the implementation of management practices such as vegetation manipulation and planting, installing sediment and erosion control structures, fencing, and acquiring, developing, and maintaining water sources.

- Maintain or improve important wildlife habitats through vegetative manipulations, habitat improvement projects, livestock grazing strategies and the application of The Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management (Wyoming Interagency Vegetation Committee 2002) and the Wyoming BLM Standard Mitigation Guidelines for Surface-Disturbing Activities, and similar guidance updated over time.
- Continue to use existing HMPs and update as necessary to include management objectives and prescriptions for wildlife: West Slope HMP, Bighorn River H&RMP and Absaroka Front HMP.
- Prohibit surface-disturbing and disruptive activities in the Bighorn River H&RMP tracts and the BLM-administered tracts in Yellowtail Wildlife Habitat Management Area (WHMA) and apply an NSO restriction as appropriate. Exceptions include casual use and uses related to the development of recreation facilities or wildlife habitat, including vegetation treatments.
- In cooperation with WGFD, local governments, and other stakeholders, limit access (including motorized vehicle, horseback, and pedestrian) where necessary in crucial habitat and sensitive species habitat. The type of limitation, if any, depends on the kind of resource value being protected.
- Conduct habitat enhancement vegetation treatments within sagebrush communities as opportunities and funding allow consistent with EO 2011-5.
- Modify identified hazard fences, and analyze and construct new fences in accordance with appropriate wildlife needs and the BLM Fencing Handbook 1741-1 and WO IM 2010-022.
- Conduct vegetation treatments within aspen stands for wildlife values as appropriate and as opportunities and funding allow.
- Pursue exchanges to enhance public access or improve management of important wildlife habitat areas by consolidating public land.
- Apply a TLS to avoid surface-disturbing and disruptive activities within big game crucial winter range (1,324,371 acres) from November 15 through April 30; except exempt Oil and Gas Management Areas.
- Absaroka Front Management Area (130,872 acres of BLM-administered surface ownership) managed as: a mix of CSU, TLS, NSO, and unavailable for leasing; ROW avoidance/mitigation area; partially closed to motorized vehicle use and limited to designated roads and trails on the rest of the area.
- Allow water development projects in crucial elk winter range and in greater sage-grouse nesting habitat with 10 inches or less annual precipitation only when adverse effects can be avoided or mitigated based on site-specific analysis. Allow existing uses pending site-specific analysis on a priority basis.
- Address traditional migration and travel corridors for big game wildlife species and migratory birds on a case-by-case basis except in the Big Horn Front Master Leasing Plan (MLP); prohibit surface-disturbing activities within ½ mile of big game migration corridors (97,808 acres).
- Determine the appropriate desired plant community to manage vegetation on a case-by-case basis in areas identified as habitat for special status species or crucial winter range for big game.
- Avoid wind energy projects in big game crucial winter range, raptor concentration areas, and Greater Sage-Grouse Core Habitat Areas.

6.19.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to fish and wildlife resources are listed below.

Canada Lynx

- The BLM shall only allow pre-commercial thinning when stands no longer provide snowshoe hare habitat.
- The BLM shall ensure that improvement harvests (commercial thinning, selection, etc.) are designed to retain and improve recruitment of an understory of small diameter conifers and shrubs preferred by hares.
- In high-elevation riparian areas, especially those subject to grazing, the BLM shall ensure that weed assessments and weed control are conducted to optimize habitat for snowshoe hares.

Grizzly Bear

- Important grizzly bear food resources that may occur on BLM-administered land, particularly whitebark pine, army cutworm moths, ungulates (primarily elk calving grounds), and spawning cutthroat trout, shall be noted and monitored. Other important foods may be added to those listed above as our understanding of grizzly bear food resources on BLM-administered land grows.
- The BLM shall provide a packet of educational materials to authorized permittees in grizzly habitat, including, but not limited to, special recreation permittees, livestock permittees, and timber operators.

Ute Ladies'-tresses

- The BLM will maintain biological diversity of plant and animal species; support the Wyoming Game and Fish Department strategic plan population objective levels to the extent practical and to the extent consistent with BLM multiple use management requirements; maintain, and where possible, improve forage production and quality of rangelands, fisheries, and wildlife habitat; and to the extent possible, provide habitat for threatened and endangered and special status plant and animal species on all public lands in compliance with the Endangered Species Act and approved recovery plans.

6.19.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for wildlife resources that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.19.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Fish and wildlife resource management actions will lead to a benefit in habitat quality for the Canada lynx. The diversity of habitats and landscapes managed under the fish and wildlife resource program provides important areas for breeding, birthing, foraging, wintering, and migration of various species. Management and protection of these areas will protect and enhance snowshoe hare and red squirrel populations. Limiting access to specific areas, prohibiting surface disturbance, and imposing road closures for other wildlife species would benefit Canada lynx. Management actions associated with habitat improvement projects may cause Canada lynx to avoid or abandon habitats near these projects. Because of the BLM's adherence to the LCAS, wildlife management actions within LAUs would likely have beneficial impacts by maintaining or improving existing habitat conditions that will benefit lynx and their prey. Implementing fish and wildlife resources management *may affect but is not likely to adversely affect* the Canada lynx due to *beneficial effects (NLAA-b)*. This determination is based on management actions and conservation measures that will protect and enhance Canada lynx habitat and their prey species.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Management and protection of habitats for special status wildlife species may influence potential habitats for grizzly bear. The objective of special status wildlife species management is to protect their habitats and allow for reintroduction or maintenance. These management actions will result in beneficial effects to grizzly bears by limiting harassment and disturbance to denning and foraging areas. The diversity of habitats and landscapes managed under the fish and wildlife resource program provides important areas for breeding, birthing, foraging, wintering, and migration of various species. Management and protection of these areas will protect and enhance grizzly bear habitat. Implementing fish and wildlife resources management *may affect, but is not likely to adversely affect* the grizzly bear due to *beneficial effects (NLAA-b)*. This determination is based on the potential for these actions to limit harassment and displacement of grizzly bear and minimize adverse effects to grizzly bear activity areas. In addition, management actions for other special status wildlife species within occupied grizzly bear habitat will benefit the grizzly bear.

North American Wolverine – Fish and wildlife resource management actions will lead to a benefit in habitat quality for the North American wolverine. The objective of special status wildlife species management is to protect their habitats and allow for reintroduction or maintenance. These management actions will result in beneficial effects to the North American wolverine by maintaining or improving important wildlife habitats, limiting access (including motorized vehicle, horseback, and pedestrian) where necessary in crucial habitat and sensitive species habitat occurs. Fish and wildlife resource management actions that lead to a benefit in habitat quality for prey species of the wolverine may also indirectly benefit the wolverine. The implementation of fish and wildlife resource management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on management actions that will protect and enhance wolverine habitat and their prey species.

Ute Ladies'-tresses – Fish and wildlife management actions will improve habitat for the Ute ladies'-tresses by maintaining or improving riparian or wetland habitat conditions, on which the species depends. Prohibition of surface-disturbing activities at least within 500 feet and up to ¼ mile if needed to protect sensitive resources, waters of the state, perennial surface water, and riparian/wetland areas would reduce these effects. Implementation of management actions in the RMP would require clearance surveys in any suitable habitats prior to the approval of any activity planned in suitable habitat, including prescribed fire. Activities within known populations would not be permitted. Implementing fish and wildlife resource management actions *may affect, but is not likely to adversely*

affect the Ute ladies'-tresses due to *beneficial effects (NLAA-b)*. This determination is based on the potential for improvement of habitat.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the planning area. Fish and wildlife management actions on nonfederal lands may result in temporary impacts to threatened and endangered species, but are anticipated to benefit threatened and endangered species overall through habitat improvements.

6.20. Special Status Species – Plants

The BLM is responsible for managing habitat for special status plant species. Special status species considered in this analysis are those listed as threatened or endangered under the ESA, those proposed for listing under the provisions of the ESA, and those the BLM State Director or the state of Wyoming have designated as sensitive. One threatened species, Ute ladies'-tresses, could occur in the Planning Area; 11 BLM sensitive species are known to occur. This BA does not consider BLM sensitive species.

Most of the trends that affect other plant species in the Planning Area also affect special status species. These include habitat degradation and fragmentation, grazing practices and management, invasive species, motor vehicles, and climate. The BLM manages public lands to conserver or improve habitats for special status plants.

6.20.1. Proposed Management Actions for Special Status Species Plants under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for special status resources that benefit threatened and endangered species:

- Postpone or modify projects that may affect special status species to protect these species. Consult with USFWS in such cases, as required by the ESA.
- Consult with stakeholders in postponing or modifying projects that may affect special status species.
- Assist authorized agencies in the restoration, reintroduction, augmentation, or re-establishment of threatened, endangered, and other special status species populations and/or habitats.
- Motorized vehicle use is limited to designated roads and trails in essential and recovery habitat for threatened or endangered species as identified and designated by USFWS.
- Avoid range improvement projects that may concentrate herbivory within ¼ mile of BLM special status plant species populations unless the project is determined to be beneficial or neutral to the plant species.
- On a case-by-case basis, allow placement of forage supplements after considering the location of BLM special status plant species.
- Review all federal actions and authorizations for potential impacts to BLM special status plant species. Implement avoidance and mitig0ation measures in coordination with surface owners on split-estate.
- Avoid aerial applications of herbicides within ½ mile of BLM special status plant species. Allow vehicle and hand application of herbicides.
- Allow the application of fire suppression chemicals within ¼ mile of known/documented populations of BLM special status plant species with the consent of the authorized officer.

- Implement conservation measures, terms and conditions, and appropriate BMPs and reasonable and prudent measures within existing state programmatic biological opinions for the Ute ladies'-tresses orchid.

6.20.2. BLM-Committed Conservation Measures

Conservation measures for the Ute ladies'-tress as identified in the BLM statewide programmatic BA (BLM 2007c) and the Biological Opinion (USFWS 2007b) for the BLM's statewide programmatic BA would be implemented by the Bighorn Basin Proposed RMP and are summarized in Section 9.6.2.

6.20.3. Best Management Practices

The following reseeding BMPs have been identified:

- Prior to surface-disturbing activities, native seed (of species or local genotypes that are commercially unavailable) will be collected from the area and stored for use during reclamation. Seedlings or plugs of common dominant species will be propagated, preferably locally, in preparation for use in portions of the area to be reclaimed to expedite vegetation recovery.
- Native seeds will be collected under the procedures of the Seeds of Success Program for (1) use in research and development for additional commercially available varieties of seeds needed for reclamation and restoration, and for (2) long-term germplasm storage to identify and protect local native biodiversity.
- Areas of sustainable plant communities and populations will be identified as sources for native plant material and will be managed under the consideration of the need to consistently produce seed stocks of non-commercially available materials for use in reclamation and restoration work (e.g., to support reclamation of abandoned mine lands (AMLs) or well pads or to supplement commercially available seeds in high fire years).

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.20.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Management actions for special status plants will not impact the Canada lynx. General management actions will include restrictions of actions and surface disturbance that may be detrimental to special status plants. Implementing special status plant management actions will result in *no effect (NE)* to the lynx. This determination is based on the localized nature of these actions and the restrictions of surface disturbance in these areas, as well as potential improvements to these habitats.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Management actions for special status plants will not impact the grizzly bear. General management actions will include restrictions of actions and surface disturbance that may be detrimental

to special status plants. Implementing special status plant management actions will result in *no effect (NE)* to the grizzly bear. This determination is based on the localized nature of these actions and the restrictions of surface disturbance in these areas, as well as potential improvements to these habitats.

North American Wolverine – Management actions for special status plants will not impact the wolverine. General management actions will include restrictions of actions and surface disturbance that may be detrimental to special status plants. Implementing special status plant management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the localized nature of these actions and the restrictions of surface disturbance in these areas, as well as potential improvements to these habitats.

Ute Ladies'-Tresses – Protection and conservation of the Ute ladies'-tresses and its habitat could have beneficial effects on this species. Restrictions on actions within Ute ladies'-tresses habitat may help to improve habitat. Implementing special status plant management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *beneficial effects (NLAA-b)*. This determination is based on the potential that these actions will limit disturbance in Ute ladies'-tresses potential habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Protection and enhancement of special status plant species on nonfederal lands will conserve habitat for threatened and endangered species and potentially limit habitat fragmentation.

6.21. Special Status Species – Fish and Wildlife

The purpose of the management actions related to special status fish and wildlife species in the Bighorn Basin RMP and EIS, is to focus efforts on maintaining habitats for special status species. Special status species includes those listed as threatened, endangered or proposed for listing under the provisions of the ESA and those the BLM State Director designates as sensitive. The inclusion of the BLM sensitive species means that additional species beyond those ESA-related species addressed in this BA are managed for under the RMP as sensitive.

Several policies and agreements guide management of special status species and their habitat in the Planning Area. In March 1990, the WGFD and the BLM signed an MOU (WGFD and BLM 1990), the purpose of which is to strengthen the agencies' cooperative approach to managing wildlife and wildlife habitat on public land and to encourage the agencies to work together to develop, enhance, maintain, and manage wildlife resources, including planning and sharing data concerning biological resources.

The BLM Wyoming Sensitive Species Policy and List is prepared to focus species management efforts on maintaining habitats for these species (BLM 2010). The goals of this policy include the following:

- Maintaining vulnerable species and habitat components in functional BLM ecosystems
- Ensuring sensitive species are considered in land-management decisions
- Preventing a need for species listing under the ESA
- Prioritizing needed conservation work with an emphasis on habitat

The BLM is responsible for managing habitat; state and federal wildlife management agencies oversee the management of special status wildlife and fish species. The WGFD manages resident special status fisheries and wildlife populations and waterfowl in the Planning Area.

Special Status Species – Fish

Fisheries habitats in the Planning Area include perennial and intermittent streams that support fish through at least a portion of the year. Special status fish species are listed as endangered or threatened, or are proposed for listing under the ESA. Special status fish species also include those designated as BLM sensitive species or state of Wyoming species of concern. No federally listed fish species are known to occur in the Bighorn Basin; however, the Bighorn River and the Clarks Fork of the Yellowstone River both drain into the Yellowstone River, which supports listed species downstream.

The Yellowstone cutthroat trout is the only BLM sensitive fish species and only native trout found in the Planning Area. There is Yellowstone cutthroat trout habitat in the Wind/Bighorn and Yellowstone drainage. This species is found in the headwater streams of Greybull, Shoshone, and Clarks Fork of the Yellowstone rivers and their tributaries along the Absaroka Front area on the western side of Bighorn River. Three other game species of concern are known to occur in the Planning Area – the burbot, sauger, and shovelnose sturgeon. Burbot and sauger are found in Boysen Reservoir and downstream in Bighorn River to Yellowtail Reservoir. These species are not addressed in this BA, because they are not federally listed or proposed.

Special Status Species – Wildlife

Special status wildlife species are those listed as threatened or endangered, or are proposed for listing under the provisions of the ESA and those the BLM State Director designates as sensitive. Special status wildlife species in the Planning Area inhabit a variety of habitat types, including sagebrush shrublands, grasslands, and riparian/wetland habitats. Comprehensive data on population numbers and distribution within the Planning Area are not available for most special status species. Most of the trends that affect other species of wildlife in the Planning Area also affect special status species. These include habitat degradation and fragmentation; livestock, wildlife, and ungulate grazing and browsing; invasive species; motor vehicles; and climate.

In addition to the one endangered species, two threatened species, and one proposed species are the subject of this BA. Twenty-six BLM sensitive species are also known to occur or have potential habitat in the Planning Area. The BLM uses HMPs to focus habitat management for special status and other species in the Planning Area. There is no designated critical habitat in the Planning Area.

6.21.1. Proposed Management Actions for Special Status Fish and Wildlife Species under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for special status fish and wildlife species that benefit threatened and endangered species:

- Reintroduce appropriate fire regimes to limit conifer encroachment into the sagebrush plant communities. Take into account invasive herbaceous species and Fire Regime Group and Fire Regime Condition Class (measure of departure from historic fire regime) with treatments. Where possible, achieve a balance between treating areas that have extensively departed from the historic fire regime (Condition Class 3) and areas that are functioning within an appropriate fire regime (Condition Class 1).
- Reduce the density of conifers that have encroached into, but do not yet dominate sagebrush plant communities.

- Postpone or modify projects that may affect special status species to protect these species. Consult with the USFWS in such cases, as required by the ESA.
- Consult with stakeholders in postponing or modifying projects that may affect special status species.
- Assist authorized agencies in the restoration, reintroduction, augmentation, or re-establishment of threatened, endangered, and other special status species populations and/or habitats.
- Motorized vehicle use is limited to designated roads and trails in essential and recovery habitat for threatened or endangered species.
- Work with proponents to design powerlines following USFWS guidelines to protect raptors from electrocution and to reduce predation on other special status species. Work with ROW holders to retrofit existing lines.
- Promote the maintenance and improvement of habitat quantity and quality to avoid, reduce, or mitigate adverse impacts on the habitats of migratory bird species of conservation concern to the extent feasible, and in a manner consistent with regional or statewide bird conservation priorities.
- To protect nesting raptors, apply a TLS on 126,241 acres to prohibit surface-disturbing and disruptive activities within:
    - ¼ mile of active raptor nests and ½ mile of active golden eagle, bald eagle, northern goshawk, merlin, and prairie and peregrine falcon nests during specific species nesting period or until young birds have fledged.
    - 1 mile of active ferruginous hawk nests from March 1 to July 31 or until young birds have fledged.
- To protect the actual nest site, apply a year-round CSU stipulation within ¼ mile of all raptor nests (47,651 acres).
- When cleaning or removing sediment from wet reservoirs, where feasible, retain riparian vegetation such as cottonwoods, willows, cattails, sedges, and rushes for wildlife habitat values.
- Avoid surface-disturbing activities within ¼ mile of waters of the state, perennial surface water, and riparian/wetland areas except when such activities are necessary and their impacts can be mitigated to an acceptable level.
- Avoid range improvement projects that may concentrate herbivory within ¼ mile of BLM special status plant species populations unless the project is determined to be beneficial or neutral to the plant species.

6.21.2. BLM-Committed Conservation Measures

Conservation measures for the black-footed ferret, Canada lynx, grizzly bear and Ute ladies'-tresses as identified in the BLM statewide programmatic BAs and BOs for these species would be implemented by the Bighorn Basin Proposed RMP. A comprehensive list of conservation measures for these species is provided in Section 9.0.

6.21.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for special status fish and wildlife resources that benefit threatened and endangered species. However, BMPs within existing statewide

programmatic BAs and BOs are considered optional or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.21.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Management and protection of habitats for special status wildlife species may influence potential habitats for Canada lynx. For example, Grizzly bear conservation measures requiring the maintenance of PFC and road re-vegetation will also benefit the lynx. The objective of special status species management is to protect their habitats and allow for species reintroduction, and to minimize disturbance where needed. A MA that will "postpone or modify projects that may affect special status species" and Conservation measures from the LCAS and statewide programmatic BOs and BAs (Section 9.0) will result in beneficial effects to lynx by maintaining or enhancing habitats and minimizing disturbance. Implementing special status wildlife management actions *may affect, but is not likely to adversely affect* the lynx due to *beneficial effects (NLAA-b)*. This determination is based on the potential for these actions to mitigate potential disturbance or displacement of lynx, and maintain or enhance potential lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Management and protection of habitats for special status wildlife species may influence potential habitats for grizzly bear. The objective of special status wildlife species management is to protect their habitats and allow for reintroduction or maintenance. These management actions will result in beneficial effects to grizzly bears by limiting harassment and disturbance to denning and foraging areas. Implementing special status wildlife management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *beneficial effects (NLAA-b)*. This determination is based on the potential for these actions to limit harassment and displacement of grizzly bear and minimize adverse effects to grizzly bear activity areas.

North American Wolverine – Management and protection of habitats for special status wildlife species may influence potential habitats for the wolverine. For example, Grizzly bear conservation measures requiring the maintenance of PFC and road re-vegetation will also benefit the wolverine. The objective of special status species management is to protect their habitats and allow for reintroduction and minimize disturbance where needed. A MA that will "postpone or modify projects that may affect special status species" will result in beneficial effects to wolverines, if needed, by limiting or removing potential disturbance. But because the potential wolverine habitat is limited to approximately 7,826 acres of BLM-administered lands at or above 9,500-feet elevation within the planning area, potential disturbance in very unlikely. Implementing special status wildlife management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the low probability of proposed disturbances within potential wolverine habitat and the potential for management actions to limit disturbance and minimize adverse effects to wolverine activity areas, if needed.

Ute Ladies'-tresses – Management actions associated with special status species could benefit the Ute ladies'-tresses habitat. Prohibition of surface-disturbing activities within 500 feet to protect sensitive resources and wetland restrictions would benefit the Ute ladies'-tresses. Implementation of

management actions in the RMP would require clearance surveys in any suitable habitats prior to the approval of any activity planned in suitable habitat, including prescribed fire. Activities within known populations would not be permitted. Implementing special status wildlife species management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to insignificant *effects (NLAA-i)*.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Protection of special status fish and wildlife species and maintenance and enhancement of their habitats on nonfederal lands will provide additional benefits for threatened and endangered species. In addition, limitations to development and disturbance will reduce further habitat fragmentation and species displacement.

6.22. Wild Horses

The BLM is responsible for protecting, managing, and controlling wild horses on public lands in the Planning Area. The BLM collects data about the animals and their habitat and prescribes management actions to ensure that free-roaming populations are in balance with other uses. In addition, the BLM ensures that the productive capability of wild-horse habitat and a thriving natural ecological balance is achieved and maintained. Wild horses are of interest to some members of the public and are classified as a resource value rather than a land use.

Existing wild horse herds originated from animals released into native habitat since early European-American exploration and settlement in the region in the 1800s. Current populations incorporate genetic traits from a wide variety of breeds historically used in the region. The BLM manages wild horses in the Planning Area in two Wild Horse Herd Management Areas (HMAs) – the McCullough Peaks HMA and the Fifteenmile HMA. Each HMA has a herd management plan that establishes appropriate management levels. The current wild horse population in the HMAs is 466. The BLM collects annual monitoring data to evaluate progress toward meeting management objectives. In addition, there are six Herd Areas in the Planning Area that are not currently managed for wild horses, but retain their Herd Area designation.

6.22.1. Proposed Management Actions for Wild Horses under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not propose protections for wild horse management that benefit threatened and endangered species.

6.22.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to wild horse management are listed below.

<u>*Grizzly Bear*</u>

- Wild horse roundups and other intensive wild horse management activities will avoid areas in or immediately adjacent to occupied grizzly bear habitat.

Ute Ladies'-tresses

- The BLM will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Ute ladies'-tresses populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Ute ladies'-tresses populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Ute ladies'-tresses populations and potential overgrazing of the areas occupied by the species. Surveys for Ute ladies'-tresses will be conducted in potential Ute ladies'-tresses prior to livestock operations related construction projects.

6.22.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for wild horses that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.22.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – The HMAs do not overlap with LAUs in the planning area, and therefore wildhorse management action will have no adverse effects on lynx or lynx habitat, *therefore, no effect (NE) is anticipated to the Canada lynx.*

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – The management of HMAs is not expected to adversely impact grizzly bear dispersal habitat, primarily because bear occurrence within the HMAs is extremely rare, and the core of consistent Grizzly bear occurrence within the planning area is approximately 10 miles or more west of the HMA boundaries. The BLM collects data and prescribes management actions to ensure that wild horse populations are in balance with other uses including threatened and endangered species. Wild horse management actions that may occur in occupied grizzly bear habitat would be expected to disturb resident grizzly bears in the short-term. Wild horse management actions implemented will be localized within the HMAs in the Planning Area therefore, affecting only a portion of the large territory occupied by the grizzly bear. Wild horse roundups and other intensive wild horse management activities will avoid areas in or immediately adjacent to occupied grizzly bear habitat. Implementing wild horse management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the unlikely Grizzly bear occurrence within in the HMAs and the existing conservation measures in place to protect the species.

North American Wolverine – The management of HMAs is not expected to adversely impact wolverines or their habitat. Wild horse management actions will be localized within the HMAs in the Planning Area and will not occur in potential wolverine habitat. Implementing wild horse management actions *is not*

likely to jeopardize (NJ) the North American wolverine. This determination is based on the localized effects of wild horse management actions in HMAs.

Ute Ladies'-tresses – No Ute ladies'-tresses are documented within the Planning Area, and therefore no HMAs occur within known occupied Ute ladies'-tresses habitat. The management of HMAs is not expected to adversely impact potential Ute ladies'-tresses habitat. The BLM collects data and prescribes management actions to ensure that wild horse populations are in balance with other uses including threatened and endangered species. The Bureau has agreed to not perform herding, corralling and transporting of wild horses in areas occupied by Ute ladies'-tresses populations. As such, activities authorized under the Bureau's wild horse program are expected to have *no effect (NE)* on Ute Ladies'-tresses populations. This determination is based on the current lack of known occurrence of Ute ladies'-tresses within the HMAs and existing conservation measures for the Ute ladies'-tresses.

Cumulative Effects – Cumulative effects include future state, or private actions reasonably certain to occur in the Planning Area. Wild horse presence may add to disturbance of threatened and endangered species, range impacts, and habitat degradation. Increased human presence from recreation (e.g., wild horse viewing) also may lead to cumulative impact on threatened and endangered species. Wild horse viewing may include more travel on roads, potential off road travel, and camping in areas where threatened and endangered species occur, adding to disturbance of these species.

6.23. Cultural 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 archeological 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. Architectural and engineering resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic value. Traditional resources can include archeological resources, structures, topographic features, habitats, plants, wildlife, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

Site identification and recording in the Planning Area dates to the mid-20th Century, when, in 1946, the Smithsonian Institution sponsored work as part of the River Basin Surveys for projects such as Anchor Reservoir in the Absaroka Mountain Slope and Owl Creek subregions and the Oregon Basin Reservoir in the Bighorn Basin subregion. Since the early 1970s, there have been extensive modern cultural resources investigations in the Planning Area. Most investigations have been accomplished in compliance with Section 106 of the National Historic Preservation Act (NHPA) and provisions of NEPA, both of which require federal agencies to consider the potential effects of federally assisted or permitted projects on important cultural resources. The BLM has performed cultural resources investigations in the Planning Area pursuant to the BLM stewardship responsibilities under NHPA Section 110, which requires federal land management agencies to identify and preserve important cultural resources on lands those agencies administer. Cultural resource investigations in the Planning Area have recorded approximately 8,340 prehistoric and historic cultural resources.

Cultural resource management actions in the Planning Area that could affect threatened and endangered species include protecting and preserving significant cultural resources and conducting inventories and data collection for documenting and developing mitigation plans prior to surface-disturbing activities of other resource programs. Inventory and collection actions can include mapping and excavation, including the use of hand tools, power tools, or heavy machinery. Stabilization of

deteriorating buildings and resources, fencing cultural resources, and constructing temporary campgrounds may also occur.

6.23.1. Proposed Management Actions for Cultural Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for cultural resources that benefit threatened and endangered species:

- Motorized vehicle use is limited to designated roads and trails in areas containing important cultural and paleontological resources.
- Avoid surface-disturbing activities and protect the foreground of important cultural sites up to three miles or the visual horizon, whichever is closer, where setting is an important aspect of the integrity for the site.
- Motorized vehicle use is limited to existing roads and trails, except where other resources impose more restrictive conditions, on BLM-administered land along the Bighorn Slope, Bridger, Owl Creek, and Absaroka Foothills to manage (minimize issues such as looting) for cultural and paleontological resources.
- For the protection of important cultural sites, pursue a withdrawal from appropriation under the mining laws on a case-by-case basis

6.23.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA are specific to cultural resources.

6.23.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for cultural resources that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.23.4. Impact Analysis and Effects Determination

In addition to the above management actions, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Management actions associated with cultural resource inventories, including surface surveys, record searches, and artifact characterization, will not affect the Canada lynx. Developing interpretive sites will occur where the cultural objects and sites themselves are located, and resident Canada lynx could be disturbed if such a site were discovered. However, the likelihood of this event taking place is low, primarily because of remoteness and public access issues. In the event that such action did occur, the MA that will “postpone or modify projects that may affect special status species”, and Disturbance limitations from the LCAS will result in beneficial effects to lynx by maintaining or enhancing habitats and minimizing disturbance. Implementing cultural resource management actions

may affect, but is not likely to adversely affect the Canada lynx due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event that a cultural site will be identified in Canada lynx habitat, and existing management actions and conservation measures.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Management actions associated with cultural resource inventories, including surface surveys, record searches, and artifact characterization, will not adversely affect the grizzly bear. Developing interpretive sites could occur where the cultural objects and sites themselves are located, and grizzly bears could be disturbed if such a site was discovered and developed. But with the following conservation measure "The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area", potential disturbance to bears will be minimized. Implementing cultural resource management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i)*. This determination is based on the event that if and when a cultural site is identified and developed, there are conservation measures in place to protect grizzly bear habitat.

North American Wolverine – Management actions associated with cultural resource inventories, including surface surveys, record searches, and artifact characterization, will not affect the wolverine. Developing interpretive sites could occur where the cultural objects and sites themselves are located, and, if present, wolverines could be disturbed if such a site was discovered and developed. However, the likelihood of this event taking place is low, because of the inaccessibility of potential wolverine habitat within the planning area. But if a cultural site were to be developed within potential wolverine habitat the MA that will "postpone or modify projects that may affect special status species" will minimize impacts to wolverine habitat. Implementing cultural resource management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on both the unlikely event that a cultural site will be identified in wolverine habitat, and that there are protections in place to minimize impacts.

Ute Ladies'-tresses – No known populations of Ute ladies'-tresses occur in the planning area. Cultural resource management may affect the Ute ladies'-tresses by excavating soils and removing or trampling vegetation in areas where management actions are implemented. Surface-disturbing activities associated with cultural resource investigations can vary in size and degree of disturbance. Impacts to the Ute ladies'-tresses will depend on the number of people conducting the investigation, the time of year, duration of the field actions, use of heavy machinery or hand tools, and the type of habitat affected. Disturbance to potential Ute ladies'-tresses habitat will only likely occur if large-scale excavation takes place. Avoiding surface-disturbing activities and protecting important cultural sites up to three miles where the site is will potentially benefit the species if the site was in suitable occupied habitat. Implementing cultural resource management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the BLM's commitment to the conservation measures, which make these management actions unlikely to occur in potential Ute ladies'-tresses habitats. In addition, the BLM requires surveys to determine the presence or absence of the Ute ladies'-tresses if surface disturbance is planned in potential habitat. If cultural resources are found in potential Ute ladies'-tresses habitats, restrictions protecting the cultural resources may benefit the Ute ladies'-tresses.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. The cumulative effects of cultural resource programs on nonfederal lands are anticipated to be limited across the Planning Area; however, if actions for these programs occur in threatened and endangered species habitats, these species may be adversely impacted. Surface disturbance may directly impact habitat and human presence may cause species to avoid these areas. Actions from these programs also may spread invasive species, thereby degrading threatened and endangered species habitat.

6.24. Paleontological Resources

Management of paleontological resources on public lands is aimed at protecting vertebrate and other scientifically important fossils for the benefit of the public as a whole. BLM policy defines important fossils as including all vertebrate fossil remains, and plant and invertebrate fossils determined, on a case-by-case basis, to be scientifically unique. Abundance of these resources varies, with some geologic formations containing few or no important fossils and other formations known to commonly produce important fossils throughout the formation.

Congress passed the Paleontological Resources Preservation Act (PRPA) in March 2009. This Act supplements existing laws and guidance regarding paleontological resources on BLM-administered lands (e.g., FLPMA, BLM Manual 8270, and BLM Handbook H-8270-1). To address requirements in the PRPA, the BLM issued two IMs ("Casual Collecting of Common Invertebrate and Plant Paleontological Resources under the Paleontological Resources Preservation Act of 2009," April 24, 2009; "Confidentiality of Paleontological Locality Information under the Omnibus Public Lands Act of 2009," June 5, 2009) (BLM 2009f; BLM 2009g).

The Planning Area is one of the most important areas in the northern hemisphere for the paleoecological study of global climate change. Recent and current scientific research is focused on the Paleocene-Eocene Thermal Maximum stratigraphic zone, which provides important data about paleoclimate in the basin. This important geologic contact between the Fort Union and Willwood formations in the Bighorn Basin and adjacent strata is an internationally known marker for data on paleoclimate, carbon isotopes, past global warming, and mammalian evolution. This important geologic zone is found in several locations throughout the Planning Area, including in the Clarks Fork Basin and Polecat Bench areas, south of McCullough Peaks, the Foster Gulch area, and several areas in the southern part of the basin. Research interest focusing on these areas is expected to increase over the next planning cycle.

The Planning Area is one of the principal areas in the United States for paleontological research on plants, dinosaurs, dinosaur track sites, early mammal evolution, and paleoenvironments, with a long history of producing many important dinosaur, mammal, and plant specimens.

Paleontological resources management actions in the Planning Area that could affect threatened and endangered species include protecting and preserving paleontological resources and conducting inventories and data collection. Inventory and collection actions can include mapping and excavation, including the use of hand tools, power tools, or heavy machinery. Surface-disturbing activities associated with paleontological management actions include collecting invertebrate and plant fossils, inventorying paleontological resources, developing interpretive sites, and stabilizing erosion.

6.24.1. Proposed Management Actions for Paleontological Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not propose protections for paleontological resources that benefit threatened and endangered species.

6.24.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA are specific to paleontological resources.

6.24.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for paleontological resources that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.24.4. Impact Analysis and Effects Determination

The conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – No known fossil areas occur in Canada lynx habitat in the planning area. Collection of fossils on public land will have minimal effects on Canada lynx and their habitats. But since we cannot totally control where the public might hunt for fossils, possible effects include increased human activity and minor surface disturbances associated with fossil retrieval. Disturbance limitations from the LCAS would minimize adverse impacts from paleontological actions if needed. Implementing paleontological resources management *may affect, but is not likely to adversely affect* the Canada lynx due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event that paleontological resources management actions will occur within Canada lynx habitat, existing conservation measures, and the relatively small amount of surface disturbance associated with fossil collection.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – No known fossil areas occur in grizzly bear habitat in the planning area. Collection of fossils on public land will have minimal effects on grizzly bear and their habitats. Possible effects include increased human activity and minor surface disturbances associated with fossil retrieval. The conservation measure requiring areas with vegetation removed due to authorized activities in occupied grizzly bear habitat be revegetated and reclaimed in a fashion that considers all grizzly bear needs or requirements would minimize adverse impacts to this species. In addition, the conservation measure that restrict the timing of activity and spatial considerations for grizzly bears will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area would also minimize adverse impacts to this species. Implementing paleontological resources management *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects*

(NLAA-d). This determination is based on the unlikely event that paleontological resources management actions will occur within grizzly bear habitat, existing conservation measures, and the relatively small amount of surface disturbance associated with fossil collection.

North American Wolverine – Collection of fossils on public land will have minimal effects on wolverines and their habitats. Possible effects include increased human activity and minor surface disturbances associated with fossil retrieval. Implementing paleontological resources management *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the unlikely event that paleontological resources management actions will occur within potential wolverine habitat.

Ute Ladies'-tresses – Collecting fossils on public land will have minimal effects on the Ute ladies'-tresses and its habitats. Potential impacts depend on the number of people conducting the investigation, the time of year, duration of the field actions, use of heavy machinery or hand tools, and the type of habitats affected. As with any surface-disturbing activity, surveys for Ute ladies'-tresses will be conducted in potentially suitable habitats prior to any surface-disturbing activity taking place. Surface disturbance will be prohibited within 500 feet of surface water and riparian areas. Implementing paleontological management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event that these management actions will occur in Ute ladies'-tresses habitats. In addition, existing conservation measures in place will minimize impacts to the species.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. No actions associated with paleontology on nonfederal lands that could affect threatened and endangered species are anticipated.

6.25. Visual Resource Management

The BLM has a basic stewardship responsibility to identify and protect visual values on public lands (BLM 1984C). To accomplish this, visual values are systematically identified and evaluated to determine appropriate management objectives. The following paragraphs describe the VRM system.

- **Visual Resource Inventory.** The BLM prepares and maintains visual inventories to identify visual values for all public lands (BLM 1986B).
- **Visual Management Objectives.** The BLM considers visual values along with other resource values in the RMP process. Based on an analysis of visual values, along with other resource values and opportunities in a given area, the BLM establishes visual objectives. Approved VRM objectives (Management Classes) provide visual management standards for the design and development of projects on the public lands.
- **Visual Contrast Rating.** The BLM uses the visual contrast rating (BLM 1986C) to analyze proposed projects during the environmental review process. Visual contrast ratings determine whether proposed projects meet established VRM objectives. They also are a valuable tool to identify visual impacts and to identify effective means to mitigate them.
- **Visual Design Principles.** The VRM system is designed to separate the existing landscape and proposed projects into features (landforms and water, vegetation, and structures), and landscape character elements (form, line, color, and texture) to compare each part to the other to identify parts that are not in harmony. Basic landscape design principles, which include repeating landscape character elements, minimizing surface disturbance, and proper siting and location, are invaluable to design (or re-design) projects to minimize adverse visual impacts.

There are many highly scenic areas in the Planning Area. The landscape exhibits a high degree of variability in the visual environment. The Planning Area contains open rolling hills, low mesas, spectacular badland areas, small mountain ranges, scenic river valleys, narrow, deep canyons, and dramatic colorful ridges. Specific scenic areas in the Planning Area include the slopes of the Big Horn and Absaroka mountains; badland areas such as McCullough Peaks, Fifteenmile area, and Bobcat Draw; dramatic landforms like Sheep Mountain; portions of the Bighorn River corridor; Heart Mountain; and the numerous canyons along the west slope of the Big Horns. Rattlesnake and Cedar mountains, along with the Shoshone River canyon, frame the major travel corridor between Cody and Yellowstone National Park (YNP). The Wind River Canyon into Thermopolis, and Highways 16, 14, and 14a offer high scenic qualities to the casual observer as they enter the basin.

6.25.1. Proposed Management Actions for Visual Resource Management under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for VRM that benefit threatened and endangered species.

- Manage visual resources in accordance with VRM class objectives:
- VRM class allocations for BLM-administered surface lands are as follows:
  - Class I – 141,127 acres (4.4%)
  - Class II – 731,812 acres (22.9%)
  - Class III – 738,531 acres (23.1%)
  - Class IV – 1,580,470 acres (49.6%)
  - Unclassified – 37 acres (<0.1%)
- Meet the VRM objectives before authorizing land uses that may affect the visual character of the landscape.

6.25.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA are specific to visual resource management.

6.25.3. Best Management Practices

The BLM will use standard measures to reduce the visual impact of proposed actions within trail settings, where setting is a contributing element of eligibility to the National Register of Historic Places (NRHP) and the setting has integrity. Standard measures should be used as stipulations or conditions of approval attached to authorizations. Standard measures, or BMPs, for reducing the visibility of proposed actions include, but are not limited to:

- Apply a CSU stipulation to surface-disturbing activities or surface occupancy.
- Apply Visual Contrast Ratings and, as appropriate, require visual simulations.
- Consolidate project facilities among oil and gas developers; maximize use of existing locations.
- Develop coordinated road and pipeline systems.

- Reduce the amount of surface development by consolidating facilities.
- Use low profile facilities.
- Locate projects to maximize the use of topography and vegetation to screen development.
- Design projects to blend with topographic forms and existing vegetation patterns.
- Use environmental coloration or advance camouflage techniques to reduce the visual impact of facilities that cannot be completely hidden.
- Use broken linear patterns for road developments to screen roads as much as possible. This can include feathering or blending of the edges of linear rights-of-way to soften the dominant line form.
- For livestock control, use electric fencing with low-visibility fiberglass posts and environmental colors.
- Design linear facilities and seismic lines to run parallel to key observation points rather than perpendicular.
- Position facilities to present less of a visual impact (e.g., a facility with several tanks lined up so that one obscures the visibility of the others).

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.25.4. Impact Analysis and Effects Determination

In addition to the above management actions and BMPs, the conservation identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Threatened and Endangered Species – Actions associated with VRM will not directly impact threatened or endangered species or any potential habitat. VRM will exclude some actions and structures from designated viewsheds and may have a beneficial impact of limiting disturbance in habitats suitable for threatened and endangered species. Implementing VRM actions *may affect, but is not likely to adversely affect* the threatened and endangered species due to *beneficial effects (NLAA-b)*. This determination is based on the potential of these management actions to preserve or minimize disturbance to habitats suitable for threatened and endangered species.

Proposed Species – Management of visual resources is not anticipated to detrimentally impact proposed species. Management of visual resources *is not likely to jeopardize proposed species (NJ)* or their habitats.

6.26. Lands and Realty

The lands and realty program manages the underlying land base that supports all resources and management programs in the Planning Area. Management decisions for lands and realty are limited to BLM-administered public lands, though lands and realty actions during the life of the RMP could involve other surface managers (through easements and land tenure adjustments). The primary activities of the lands and realty program include (1) land use authorizations such as ROWs, leases, and permits, (2) land tenure adjustments, including sales and other types of disposal actions, exchanges, donations, acquisitions of lands and interests in lands (i.e., access easements), and (3) withdrawals, classifications, and segregations. As part of the processing of lands and realty actions, the BLM works cooperatively

with other federal agencies, the state of Wyoming, cities and counties, and public and private landholders.

The BLM administers 3,187,814 acres (56%) of surface lands in the Planning Area. Private land ownership accounts for the second largest amount of surface land ownership in the Planning Area. Of the four counties in the Planning Area, Big Horn County contains the largest amount of BLM-administered land.

6.26.1. Proposed Management Actions for Lands and Realty under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for land and realty resources that benefit threatened and endangered species:

- Retain approximately 3,121,558 acres of BLM-administered surface ownership.
- Withdraw 211,398 acres in the Planning Area.

6.26.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to lands and realty are listed below.

Canada Lynx

- The BLM shall ensure that proposed land exchanges, land sales, and special use permits are evaluated for effects on key linkage areas.

Grizzly Bear

The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.

Ute Ladies'-tresses

- The disposal (sale and removal) of salable minerals is a discretionary BLM action and is prohibited within a 0.25 mile buffer area of known populations of Ute ladies'-tresses orchids.
- To prevent loss of habitat for the Ute ladies'-tresses, the BLM "shall retain in Federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival". Prior to any land tenure adjustments in known habitat for the Ute ladies'-tresses, the BLM will survey to assess the habitat boundary and retain that area in Federal ownership. Bureau-administered public lands that contain identified habitat for the Ute ladies'-tresses will not be exchanged or sold, unless it benefits the species.
- All proposed rights-of-way projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Ute ladies'-tresses habitat to minimize disturbances. If avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the Service.

6.26.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for lands and realty that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.26.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – There are no current BLM land holdings identified for disposal within potential lynx habitat, (LAUs). Lands not under BLM jurisdiction that are suitable or occupied lynx habitats may be targeted for acquisition and subsequent management by the BLM, which would provide benefits to lynx that may not be afforded under nonfederal ownership. The acquisition of access easements and issuance of ROWs and leases for utility corridors may affect the lynx if the associated construction is within the vicinity of travel corridors. This may cause short-term behavioral avoidance of these areas by the lynx due to the presence of human activity. The establishment of withdrawals, acquisition of conservation easements, and road closures/rehabilitation would close areas to certain activities that could have a beneficial effect on lynx. In the event that potential disturbances were proposed within LAUs, the MA that will "postpone or modify projects that may affect special status species", and Disturbance limitations from the LCAS will result in beneficial effects to lynx by maintaining or enhancing habitats and minimizing disturbance. Implementation of lands and realty management actions with the associated conservation measures as provided in the Proposed RMP *may affect, but is not likely to adversely affect* the Canada lynx due to *insignificant effects (NLAA-i). This determination is based on the beneficial impacts of not identifying potential lynx habitat for disposal, and existing management actions and conservation measures.*

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Current BLM land holdings would be evaluated prior to disposal, including suitability and use by grizzly bear. Disposal or transfer of public lands may affect the grizzly bear's ability to use suitable habitats and travel corridors. Lands identified as important habitat or travel corridors would not likely be available for disposal as the BLM evaluates these disposals on a case-by-case basis, and 6840 guidance provides a conservation measure where BLM lands that contain identified habitat for Threatened and Endangered Species will not be exchanged or sold, unless it benefits the species. Lands not under BLM jurisdiction that are suitable or occupied grizzly bear habitats may be targeted for acquisition and subsequent management by BLM, which would provide benefits to grizzly bear. The acquisition of access easements and issuance of ROWs and leases for utility corridors may affect the grizzly bear if the associated construction is within the vicinity of travel corridors. This may cause short-term behavioral avoidance of these areas by the grizzly bear due to the presence of human activity. In the of a proposed disturbance in grizzly bear habitat a conservation measure provides that the proposal will be analyzed and planned with active grizzly bear protection measures, with restrictions on timing of activity and spatial considerations for grizzly bear, if needed. The establishment of withdrawals, acquisition of conservation easements, and road closures/rehabilitation would close areas to certain activities that could have a beneficial effect on grizzly bear. Implementation of land resource

management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i). This determination is based on the unlikely event of disposal of Grizzly bear habitat, and the existing conservation measures in place to evaluate effects of acquisitions, disposals, and withdrawals and protect against disturbance of the grizzly bear.*

North American Wolverine – There are no current BLM land holdings identified for disposal within potential wolverine habitat. The establishment of corridors for utility/transportation systems may adversely impact the wolverine if such actions occur in or near wolverine habitat. In the event that potential disturbances were proposed within wolverine habitat, the MA that will "postpone or modify projects that may affect special status species" will minimize if not remove impacts. Conversely, land acquisitions and protective withdrawals may provide benefits to wolverines by acquiring additional land containing suitable wolverine habitat. Implementing actions associated with lands and realty *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the *beneficial impacts of not identifying potential* wolverine habitats for disposal, and the low potential for other land management actions to disturb or remove wolverine habitats.

Ute Ladies'-tresses – Land disposal, exchanges, and establishment of corridors for utility or transportation systems may impact Ute ladies'-tresses habitats. However, the BLM rarely conveys properties with high resource values, especially those with known threatened or endangered species. To prevent loss of habitat for the Ute ladies'-tresses, the BLM "shall retain in Federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival" (BLM 2001). Prior to any land tenure adjustments in known Ute ladies'-tresses habitat, the BLM will survey to assess the habitat boundary and retain that area in federal ownership. BLM-administered public lands that contain identified habitat for the Ute ladies'-tresses will not be exchanged or sold, unless it benefits the species. Implementation of the **l**and acquisition, disposal, and withdrawal management actions will have *no effect (NE)* on the Ute ladies'-tresses. This determination is based on low potential for land disposal under BLM management and implementing conservation measures for the Ute ladies'-tresses and its habitats. Land acquisition of potential Ute ladies'-tresses habitats may provide beneficial effects to this species.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Land acquisitions, exchanges, and protective withdrawals have the potential to benefit threatened or endangered species. Conversely, lands and realty management actions by state, local, or private entities could alter or remove threatened or endangered species suitable habitats.

6.27. Renewable Energy

Solar, wind, biomass, and hydroelectric power are considered renewable energy resources. Wind energy produces electrical energy through the use of large wind turbines. Solar power refers to energy from the sun that is converted into thermal or electrical energy. Biomass energy is the burning or use of organic materials as a source of energy. Wind, solar, biomass, and hydroelectric facilities are processed through the lands and realty program and authorized under Title V of FLPMA as ROW actions. Geothermal actions are considered a fluid leasable mineral and the BLM processes those actions according to the provisions of the Mineral Leasing Act.

BLM policy is to encourage the development of renewable energy in acceptable areas. In addition, Executive Order 13212 instructs the BLM "to expedite projects that will increase the production, transmission, or conservation of energy." As demand has increased for clean and viable energy to

power the Nation, consideration of renewable energy sources on BLM-administered land has become a necessary component of land management planning.

In March 2009, the Secretary of the Interior issued a secretarial order making the production, development, and delivery of renewable energy on public land a top priority for the DOI. In addition to making renewable energy production a top priority for the department, the secretarial order established an energy and climate change task force with the goal of furthering the renewable energy agenda and identifying specific zones on public lands where the DOI can facilitate a rapid and responsible move to large-scale production of solar, wind, geothermal, and biomass energy.

In cooperation with the U.S. Department of Energy National Renewable Energy Laboratory, the BLM assessed renewable energy resources on BLM-administered land in the western United States, including Wyoming (BLM and DOE 2003). The BLM reviewed the potential for concentrated solar power, photovoltaic, wind, biomass, and geothermal energy on DOI, Bureau of Indian Affairs, and USFS lands in the West. Additional programmatic-level documents for wind, geothermal, and solar energy (draft solar Programmatic EIS under development) describe development potential, policies, and BMPs for renewable energy resources on public lands. Development of renewable energy resources on public lands follows policy and BMPs identified in these Programmatic EISs and other resource-specific policy and guidance.

Based on current policy direction and advances in the technology, there is potential for renewable energy development in the Planning Area during the life of the Bighorn Basin RMP. Wind energy has the greatest potential for development in the Planning Area.

6.27.1. Proposed Actions for Renewable Energy under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for renewable energy that benefit threatened and endangered species:

- Consider authorization of renewable energy projects consistent with the management of other resource values.
- The Planning Area is open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance/mitigation areas to meet other resource objectives.
- Manage a total of 495,644 acres as renewable energy avoidance/mitigation areas.
- Manage a total of 1,375,529 acres as renewable energy exclusion areas.
- Manage as renewable energy avoidance/mitigation areas: the Absaroka Mountain Foothills, Beck Lake, Bighorn River, Canyon Creek, Middle Fork of the Powder River, Newton Lake Ridge, and Rivers Special Recreation Management Areas (SRMAs); the Tour de Badlands and Tatman Mountain Recreation Management Zones (RMZs); the Absaroka and Red Canyon Creek ERMAs; the Chapman Bench and Absaroka Front Management Areas; the Trapper Creek, Paint Rock, and McCullough Peaks areas; and the Sheep Mountain ACEC.
- Manage the Clarks Fork Canyon ACEC and Craig Thomas Little Mountain Special Management Area (SMA) as renewable energy exclusion areas.
- Close the Brokenback/Logging Road RMZ to renewable energy development.
- Wilderness Study Areas (WSAs) are closed to renewable energy development.

6.27.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA are specific to renewable energy.

6.27.3. Best Management Practices

Resource uses and development requiring road construction, maintenance, or any related travel and transportation management are mandated by BLM Manual 9113. BLM Manual 9113 includes the following BMPs to be used in evaluating, maintaining, and constructing transportation routes:

- Design roads to minimize total disturbance, to conform with topography, and to minimize disruption of natural drainage patterns.
- Minimize excavation.
- Retain vegetation on cut slopes where feasible and prevent disturbance to root systems during roadside brushing.
- Consider improving inadequately surfaced roads to minimize sediment production.
- Retain adequate vegetation between roads and streams to filter runoff caused by roads.
- Avoid riparian/wetland areas where feasible and locate roads and limit mechanized equipment activity to minimize their influence on riparian areas and water quality.
- Abandon, close, and rehabilitate roads that are no longer needed.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.27.4. Impact Analysis and Effects Determination

In addition to the above management actions and BMPs, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Establishment of transmission lines and corridors for renewable energy systems may impact Canada lynx indirectly through disturbance of individuals or habitat modification. However, over the life of the RMP, the BLM does not expect renewable energy projects in areas with known threatened or endangered species. LAUs are within the Absaroka Front Management Area where it is managed as a renewable energy avoidance area. In the event that potential disturbances were proposed within LAUs, the MA that will "postpone or modify projects that may affect special status species", and Disturbance limitations from the LCAS will result in beneficial effects to lynx by maintaining or enhancing habitats and minimizing disturbance. Implementing actions associated with renewable energy *may affect, but is not likely to adversely affect* the Canada lynx due to *discountable effects (NLAA-d)*. This determination is based on the low potential for renewable energy projects to be located in Canada lynx habitat, the existing conservation strategies for protection and avoidance of Canada lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Establishment of transmission lines and corridors for renewable energy systems may impact grizzly bear indirectly through disturbance of individuals or habitat modification. However, over the life of the RMP, the BLM does not expect renewable energy projects in areas with known threatened or endangered species. The majority of occupied Grizzly habitat is within the Absaroka Front Management Area where it is managed as a renewable energy avoidance area. Renewable energy projects may adversely impact grizzly bear if such actions occur. However, conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementing actions associated with renewable energy *may affect, but is not likely to adversely affect* the grizzly bear due to *discountable effects (NLAA-d)*. This determination is based on the low potential for renewable energy projects to be located in grizzly bear habitat and the existing conservation strategies for protection of grizzly bear habitat.

North American Wolverine – Establishment of transmission lines and corridors for renewable energy systems may impact wolverines indirectly through disturbance of individuals or habitat modification. However, given the accessibility, including elevation and topography, within potential wolverine habitat renewable energy projects within these habitats is unlikely and over the life of the RMP, the BLM does not expect renewable energy projects above 9500' in mountain topography. In the event that potential disturbances were proposed within potential wolverine habitat, the MA that will "postpone or modify projects that may affect special status species" will minimize these potential disturbance. Implementing actions associated with renewable energy *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the low potential for renewable energy projects to be located in potential wolverine habitat, and the existing protections for minimizing impacts.

Ute Ladies'-tresses – Establishment of transmission lines and corridors for renewable energy systems may impact Ute ladies'-tresses habitats although no known populations have been identified in the planning area. Surveys for the species would be required before authorizing activities in suitable habitat. BLM-committed conservation measures ensure that all proposed ROW projects will be designed and locations selected at least 0.25 mile from any known Ute ladies'-tresses habitat to minimize disturbances. If avoidance of adverse impacts is not possible, the BLM will re-initiate consultation with the USFWS. Implementing the renewable energy actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on low potential for renewable energy projects in suitable Ute ladies'-tresses habitat and implementing conservation measures for the Ute ladies'-tresses and its habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area.

6.28. Rights-of-Way and Corridors

Section 501 of FLPMA authorizes the BLM to grant ROWs for infrastructure and facilities that are in the public interest and require ROWs over, under, upon, or through BLM-administered lands. The BLM ROW program consists of the evaluation, authorization, and management of ROWs, including corridors, for a variety of uses on public/federal land. An ROW grant is an authorization to use specific pieces of public land for certain types of projects, such as developing roads, pipelines, transmission lines, and communications sites. A grant authorizes rights and privileges for a specific use of the land for a specific period.

In the existing plans, ROW corridors were formally designated as the preferred location for existing and future ROWs in the Planning Area. Land uses that typically do not require ROWs are those defined as

"casual use" (43 CFR 3809.5). Casual use activities involve practices that do not ordinarily cause any appreciable disturbance to BLM-administered lands, resources, or existing improvements.

An important component of the ROW program is the intrastate and interstate transportation of commodities ultimately delivered as utility services (e.g., natural gas and electricity) to residential and commercial customers. Equally important at the local level is the growing demand for legal access to private homes and ranches using ROW grants. While most existing ROW actions in the Planning Area are for linear facilities, there also are many existing site ROWs for non-linear communications sites, water reservoirs, and energy resource distribution and transmission.

The BLM and other agencies (U.S. Department of Energy Office of Electricity Delivery and Energy Reliability and the USFS) prepared the *Programmatic Environmental Impact Statement for the Designation of Energy Corridors on Federal Land in Eleven Western States* (DOE and BLM 2008). The Programmatic EIS evaluates potential impacts associated with the proposed action to designate corridors on federal land in 11 western states (including Wyoming) for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities. The Record of Decision for the Programmatic EIS amended current RMPs in both the CYFO and WFO by designating energy corridor 79-216 as a multi-modal energy corridor. Energy corridor 79-216 is the preferred location for major transmission and linear energy infrastructure in the Planning Area. This corridor contains several existing pipelines that go from the southern boundary of the Planning Area to the Montana border.

Existing ROW corridors are the preferred location for minor ROW grants. These routes or areas are located primarily along existing highways, major pipelines and powerlines, oil fields, and communication sites. Concentrating new ROW grants along existing corridors works well when the source and terminus are nearby or when land along the route is predominantly federally administered. Due to the large blocks of public land and the various locations requested for the applications received, it is not always possible to concentrate new grants into designated corridors.

The use of ROW corridors in the Planning Area has been moderate, and existing corridors designated for major ROWs have been sufficient to meet demand and the needs of public land users. ROWs on BLM-administered lands in the Planning Area have primarily supported the development of energy minerals (i.e., project access roads, gathering/transportation pipeline systems, and related oil and gas facilities). However, in recent years, access roads and utilities associated with development of private lands have become more common.

Communications sites are authorized by a ROW under Section 501 of FLPMA and administered under regulations at 43 CFR 2800. Communications sites are typically site ROWs, which consist of facilities such as small buildings, towers, antenna, and other structures. The Planning Area contains a total of 72 communications sites concentrated in seven areas. Communications site concentration areas are typically on mountaintops, ridgelines, or other high-elevation areas to allow uninterrupted transmission of the associated communications signal. Communications site plans have been prepared for each of the communications site concentration areas. These plans govern specific development and management of communications sites in the area.

There are 2,192 existing ROWs in the Planning Area covering approximately 44,539 acres. Most ROW applications in the Planning Area are for the development of powerlines, transportation and delivery of mineral-related commodities and facilities, telephone facilities (including fiber optic lines and communications sites), access roads, and water-related facilities (pipelines, ditches and canals, reservoirs). Over the last 10 years, the BLM has processed between 45 and 60 new or amended ROW applications every year for the Planning Area.

6.28.1. Proposed Management Actions for Rights-of-Way and Corridors under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for ROW and corridors that benefit threatened and endangered species:

- Authorize communication site facilities on a case-by-case basis. Encourage development within designated areas. Co-locate new communication sites where possible.
- Powerlines must be buried within Greater Sage-Grouse Core Habitat Areas unless within 0.5 mile either side of existing 115 kV or larger transmission lines creating a corridor no wider than 1.0 mile. Do not limit the width of below ground ROW corridors outside Greater Sage-Grouse Core Population Areas as long as new linear facilities are constructed adjacent to existing linear facilities accounting for adequate separation for operating system integrity; safety (construction and operations); appropriate federal, state, and local statutes, regulations, and policies; and land use constraints. If a linear facility is moved away from an adjacent utility to avoid a resource conflict, the new linear facility will still be considered to be within the ROW corridor.
- The preferred location of new ROWs will be in or adjacent to existing disturbed areas associated with existing ROWs or high traffic gravel roads or highways, where possible.
- Avoid ROW authorizations in areas having a 25 percent or greater average slope.
- Manage 2,408,662 acres as ROW avoidance/mitigation areas.
- Manage 40,802 acres as ROW exclusion areas.
- Manage the Absaroka Mountain Foothills SRMA and the Absaroka ERMA as ROW avoidance/mitigation areas, except to accommodate a demonstrated need if the effects can be adequately mitigated.
- Manage the Bighorn River SRMA, Tour de Badlands RMZ, and the Bighorn River ERMA and the Basin Gardens area as ROW avoidance/mitigation areas and co-locate ROW whenever possible.
- Manage as ROW avoidance/mitigation areas: the Canyon Creek and Middle Fork of the Powder River SRMAs, Tatman Mountain and Brokenback/Logging Road RMZs; the Trapper Creek and Paint Rock areas area of the Canyons RMZ; the Red Canyon Creek and Southern Bighorns ERMAs; the Carter Mountain, Clarks Fork Canyon, Five Springs Falls, Little Mountain, Sheep Mountain, Spanish Point Karst, and Upper Owl Creek ACECs; the Craig Thomas Little Mountain SMA; and the Absaroka Front and Chapman Bench Management Areas and the Sage Creek Prairie Dog Town.

6.28.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to ROWs and corridors are listed below.

<u>*Canada Lynx*</u>

- The BLM shall work cooperatively and proactively with the Federal Highway Administration and State Departments of Transportation to identify land corridors necessary to maintain connectivity of lynx habitat and map the location of “key linkage areas” where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx (and other wildlife).

- Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared ROW, or would foreseeably contribute to development or increases in human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.

Ute Ladies'-tresses

- All proposed ROWs (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Ute ladies'-tresses habitat to minimize disturbances. If avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the Service.

6.28.3. Best Management Practices

Resource uses and development requiring road construction, maintenance, or any related travel and transportation management is mandated by BLM Manual 9113. BLM Manual 9113 includes the following BMPs to be used in evaluating, maintaining, and constructing transportation routes:

- Design roads to minimize total disturbance, to conform with topography, and to minimize disruption of natural drainage patterns.
- Minimize excavation.
- Retain vegetation on cut slopes where feasible and prevent disturbance to root systems during roadside brushing.
- Consider improving inadequately surfaced roads to minimize sediment production.
- Retain adequate vegetation between roads and streams to filter runoff caused by roads.
- Avoid riparian/wetland areas where feasible and locate roads and limit mechanized equipment activity to minimize their influence on riparian areas and water quality.
- Abandon, close, and rehabilitate roads that are no longer needed.

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.28.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – ROW and corridor management actions can be a source of fragmentation of lynx habitat resulting in reduced opportunity for dispersal and mobility and increased mortality to lynx from collisions with vehicles. Any improved access may open new areas to human activity that may cause lynx to avoid or abandon otherwise occupied habitats. The degree of these impacts is correlated with traffic volume and speed, as well as road width. The acquisition of access easements and issuance of ROWs may affect the lynx if the associated construction is within the vicinity of travel corridors. This may cause short-term behavioral avoidance of these areas by the lynx due to the presence of human

activity. Existing ROW corridors are the preferred location for ROW grants, and these routes or areas are located primarily along existing highways, major pipelines and powerlines, oil fields, and communication sites, which do not typically contain Canada lynx habitats. No designated corridors or new communication sites are proposed within LAUs. In addition, LAUs are within the Absaroka Front Management Area, which is managed as ROW avoidance/mitigation area. In the event that potential disturbances were proposed within LAUs, the MA that will "postpone or modify projects that may affect special status species", and Disturbance limitations from the LCAS will mitigate and minimize disturbance. Implementing ROW and corridor management actions *may affect, but is not likely to adversely affect* the lynx due to *insignificant effects (NLAA-i)*. This determination is based on the unlikely event that actions associated with ROW and corridor management would occur within LAUs, and the existing protections for minimizing impacts.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – ROW and corridor management actions can be a source of fragmentation of grizzly bear habitat resulting in reduced opportunity for dispersal and mobility and in increased mortality to grizzly bear from collisions with vehicles. The degree of these impacts is correlated with traffic volume and speed, as well as road width. The majority of occupied Grizzly habitat is within the Absaroka Front Management Area where it is managed as ROW avoidance/mitigation area. ROW corridor projects may adversely impact grizzly bear if such actions occur. However, conservation measures include restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementing ROW and corridor management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i)*. This determination is based on the unlikely event that actions associated with ROW and corridor management would result in impacts to grizzly bear habitat.

North American Wolverine – ROW and corridor management actions can be a source of fragmentation of wolverine habitat resulting in reduced opportunity for dispersal and mobility. Any improved access may open new areas to human activity that may cause wolverines to avoid or abandon otherwise occupied habitats. However, given the accessibility, including elevation and topography, within potential wolverine habitat, ROW corridor projects within these habitats is unlikely. Over the life of the RMP, the BLM does not expect ROW corridors projects above 9500' in mountain topography. Also, no designated corridors or new communication sites are proposed within potential wolverine habitats, and these habitats are within the Absaroka Front Management Area which is managed as ROW avoidance/mitigation area. In the event that potential disturbances are proposed within potential wolverine habitat, the MA that will "postpone or modify projects that may affect special status species" will minimize these potential disturbances. Implementing ROW and corridor management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the unlikely event that actions associated with ROW and corridor management occur in wolverine occupied habitat, and existing protections to minimize potential impacts.

Ute Ladies'-tresses – New ROW and corridor areas through potential Ute ladies'-tresses habitat are not expected to occur in the Planning Area. Based on the conservation measures for Ute ladies'-tresses, riparian/wetland habitats would be avoided, thereby further minimizing impacts. Existing ROW corridors are the preferred location for ROW grants. These routes or areas are located primarily along existing highways, major pipelines and powerlines, oil fields, and communication sites, which do not typically contain Ute ladies'-tresses habitat. Surveys for the species would be required before authorizing activities in suitable habitat. All proposed ROW projects will be designed and locations

selected at least 0.25 mile from any known Ute ladies'-tresses habitat to minimize disturbances. If avoidance of adverse impacts is not possible, the BLM will re-initiate consultation with the USFWS. Implementing ROW and corridor management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is because Ute ladies'-tresses have not been documented in the Planning Area, and conservation measures are in place to protect the species.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Increased ROW and corridor management on private and state lands may cause additional mortality of threatened or endangered species due to collisions with vehicles.

6.29. Comprehensive Travel and Transportation Management

There are two fundamental and interrelated tasks associated with Comprehensive Travel and Transportation Management – (1) the delineation of travel management areas and (2) the delineation of motorized vehicle management areas, which designates travel management (as open, limited, or closed).

The transportation network on the public lands in the Bighorn Basin consists of federal and state highways, county roads, and roads built to facilitate industrial and commercial development. There is also an extensive network of official BLM roads that range from regularly maintained ditched and crowned gravel roads to an extensive array of unofficial roads and vehicle routes that were never formally constructed and rarely receive maintenance. Many are two-track vehicle trails created and maintained simply by the passage of motor vehicles. The network of two-track roads and trails is important for recreational and ranching uses on public lands.

6.29.1. Proposed Management Actions for Comprehensive Travel and Transportation Management under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for comprehensive travel and transportation management that benefit threatened and endangered species:

- Unless otherwise specified, motorized vehicle use on BLM-administered land is limited to existing roads and trails on an interim basis until completion of travel management planning.
- To protect resource values, approximately 61,010 acres of BLM-administered land in the Planning Area are closed to motorized vehicle use.
- The following areas are closed to motorized vehicle use: Canyon Creek Access, Cottonwood Creek (also closed to mechanized vehicle use), Gooseberry Badlands Interpretive, Lone Tree, Paint Rock, Pete's Canyon, and Salt Lick Trails; Bobcat Draw Badlands, Owl Creek, Red Butte, and Sheep Mountain WSAs; Spanish Point Karst ACEC; Five Springs Road beyond the locked gate; and Duck Swamp Environmental Education Area.
- To protect resource values, motorized vehicle use is limited to existing roads and trails on approximately 1,955,943 acres of BLM-administered land in the Planning Area.
- To protect resource values, motorized vehicle use is limited to designated roads and trails on approximately 1,159,557 acres of BLM-administered land in the Planning Area.

- To protect resource values, travel management to designated roads and trails:
  - Essential and recovery habitat for threatened and endangered species
  - Areas over important caves or cave passages
  - The West Slope of the Big Horn Mountains, Canyon Creek, Middle Fork of the Powder River, Bighorn River, Newton Lake Ridge, Rivers (North and South Forks of the Shoshone River and Clarks Fork of the Yellowstone River), Beck Lake, Absaroka Mountain Foothills, and Badlands SRMAs
  - The Absaroka, Southern Bighorns, and Red Canyon Creek ERMAs
  - The Cedar Mountain, Alkali Creek, Medicine Lodge, Trapper Creek, and Honeycombs WSAs
  - Absaroka Front Management Area
  - The Red Gulch Dinosaur Tracksite and Upper Owl Creek ACECs
  - McCullough Peaks [including McCullough Peaks WSA, Little Mountain, Rattlesnake Mountain, and Carter Mountain Travel Management Plan Areas
- Areas are closed to over-snow vehicle use on a case-by-case-basis.
- LAUs are closed to motorized over-snow travel.

6.29.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to travel and transportation management are listed below.

Canada Lynx

- The BLM shall ensure that trails, roads, and lift termini are designed to direct winter use away from diurnal security habitat.
- The BLM shall ensure that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities and shall ensure revegetation of those that are necessary. Construction on ridges and saddles should be avoided if possible.
- The BLM shall allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas in LAUs unless the designation serves to consolidate unregulated use and improves lynx habitat through a net reduction of compacted snow areas. This is intended to apply to dispersed recreation, rather than existing ski areas. Winter logging activity is not subject to this restriction.
- On projects where over-snow access is required, the BLM shall ensure use is restricted to designated routes.
- Within lynx habitat, the BLM shall ensure that key linkage areas and potential highway crossing areas are identified, using best available science.
- The BLM shall work cooperatively and proactively with the Federal Highway Administration and State Departments of Transportation to identify land corridors necessary to maintain connectivity of lynx habitat and map the location of “key linkage areas” where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx (and other wildlife).

- Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared right-of-way (ROW), or would foreseeably contribute to development or increases in human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.

Grizzly Bear

- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.

Ute Ladies'-tresses

- In any proposed new access, wetland and riparian areas will be avoided where possible.
- The BLM will limit the use of OHVs to designated roads and trails within 0.5 mile of known Ute ladies'-tresses populations, with no exceptions for the "performance of necessary tasks" other than firefighting and hazardous material cleanup allowed using vehicles off of highways. No OHV competitive events will be allowed within 1.0 mile of known Ute ladies'-tresses orchid populations. Roads that have the potential to impact Ute ladies'-tresses orchid are not required for routine operations or maintenance of developed projects, or lead to abandoned projects will be reclaimed as directed by the BLM.

6.29.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for travel and transportation management that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.29.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Travel and transportation management includes management of motorized vehicle use. Motorized vehicle management is not expected to result in detrimental effects to lynx behavior, denning, travel, or foraging habitats. Roads and trails can lead to incidental harvest or poaching of lynx, increase access for competing carnivores, increase disturbance or mortality from vehicles and loss of habitat. The size, type, and amount of use of roads affect the degree of impacts on Canada lynx. In the Dubois area, motorized vehicle use, where authorized, is restricted to designated routes. LAUs have seasonal (winter) road closures, which will reduce the effects of roads on Canada lynx. With winter closures, these habitats will provide less opportunity for other competing predators, and there would be less human disturbance. The BLM-committed conservation measures in place for all activities include the assessment of lynx habitats in suitable and unsuitable conditions and the ensuing limitations on percentage of disturbance allowable to habitats. In addition, the BLM will ensure that trails and roads

are designed to direct winter use away from diurnal security habitat. Impacts to special status species related to which roads to close or remain open will be analyzed in separate travel management plans. Implementing travel and transportation management actions *may affect, but is not likely to adversely affect* the lynx due to *insignificant effects (NLAA-i)*. This determination is based on the low likelihood that effects from motorized vehicle use could result in take and the conservation measures in place will preclude adverse effects to lynx or their habitats.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Travel and transportation management includes management of motorized vehicle use. Grizzly bears are sensitive to disturbances related to roads and may avoid roads; although there is individual variation in road avoidance. All of the Cody field office and the majority of the Worland Field office occupied Grizzly bear habitat is within the Absaroka Front Management Area where motorized vehicle use is either closed or restricted to designated routes. By closing roads in these habitats, there would be less potential for mortality from vehicles and less human disturbance. The use of OHVs, which allows access to remote areas, could impact grizzly bears by increasing use in habitat frequented by grizzly bear, but this is likely to occur in localized areas on BLM land given the varied land ownership patterns along the Absaroka Front. Travel and transportation management is not expected to result in detrimental effects to grizzly bear behavior, denning, travel, or foraging habitats. The conservation measure requiring areas with vegetation removed due to authorized activities in occupied grizzly bear habitat be revegetated and reclaimed in a fashion that considers all grizzly bear needs or requirements would minimize adverse impacts to this species. In addition, the conservation measure that restrict the timing of activity and spatial considerations for grizzly bears will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area would also minimize adverse impacts to this species. Impacts to special status species related to road densities and which roads to close or remain open will be analyzed in separate travel management plans. Implementing travel and transportation management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i)*. This determination is based on the low likelihood that effects from motorized vehicle use could result in take and conservation measures in place that will preclude adverse effects to grizzly bear and their habitats.

North American Wolverine – Travel and transportation management includes management of motorized vehicle use. Roads and trails can lead to incidental harvest or poaching of wolverine, and increase disturbance or mortality from vehicles and loss of habitat. The size, type, and amount of use of roads affect the degree of impacts. However, given the accessibility, including elevation and topography, within potential wolverine habitat in the planning area, road and trail projects within these habitats is unlikely. Over the life of the RMP, the BLM does not expect road projects above 9500' in mountain topography. Also, no road or trail projects are proposed within potential wolverine habitats. In the event that potential disturbances are proposed within potential wolverine habitat, the MA that will "postpone or modify projects that may affect special status species" will minimize these potential disturbances. Motorized vehicle management is not expected to result in detrimental effects to wolverine behavior, denning, travel, or foraging habitats. Implementing travel and transportation management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the low likelihood that travel and transportation management actions would occur within wolverine habitat and existing protections to minimize impacts.

Ute Ladies'-tresses – By implementing the conservation measures, no motorized vehicle use on roads and trails adjacent to riparian areas may lead to the spread of invasive species, reducing the suitability

of the habitats for the Ute ladies'-tresses. In addition, unauthorized trails in riparian areas and potential stream crossings could adversely impact the Ute ladies'-tresses by altering the habitat. There are no known populations in the planning area so existing roads are not likely to contain or cross habitat. Travel management actions (i.e., road closures) may be used to make significant progress towards PFC in riparian areas. This type of management may limit adverse effects to Ute ladies'-tresses. In addition, conservation measures limit the use of OHVs to designated roads and trails within 1.0 mile of known Ute ladies'-tresses populations, prohibit OHV competitive events within 1.0 mile of known Ute ladies'-tresses populations, and reclaim roads that are not required for routine operations or maintenance of developed projects, or lead to abandoned projects that have the potential to impact Ute ladies'-tresses plants. Impacts to special status species related to which roads to close or remain open will be analyzed in separate travel management plans. Implementing travel and transportation management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on having riparian/wetland areas meet or exceed PFC and Standard 2 of the Wyoming standards for Healthy Rangelands limitation use to designated roads and trails and existing conservation measures in place to protect this species.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Unauthorized use of motorized vehicles on federal lands could contribute to disturbance of soils, removal of vegetation, and the spread of invasive species. These actions could contribute to degradation of habitats for threatened and endangered species. An expanded network of roads on state and private lands would impact threatened and endangered species habitat through the fragmentation and direct loss of habitats.

6.30. Recreation

Recreational opportunities are offered to the public on all BLM-administered lands in the Planning Area to which there is legal access. Federal lands in the Planning Area provide a broad spectrum of outdoor opportunities that afford visitors the freedom of recreational choice with minimal regulatory constraints. Categories of recreation management actions include allowing recreational access and use by the public, administering special recreational permits, developing recreational areas and campsites, imposing restrictions, acquiring recreational access, and assessing effects of recreational use to the environment.

Recent BLM guidance (IM No. 2006-060 and IM No. 2007-043) establishes the agency's commitment to incorporate the framework of benefits-based management into its recreation management program. Benefits-based management is a method of managing recreation that focuses on the beneficial outcomes from engaging in recreational activities, rather than only on the recreation activities themselves. This approach gives the BLM a framework within which to manage recreation on public lands to provide outcomes that benefit individuals, communities, economies, and the environment (BLM 2009h).

The RMP planning process identifies areas where recreation is the management focus. The 2005 revision of the BLM Land Use Planning Handbook (H-1610-1) amended the criteria for identifying an SRMA; these are administrative units where the predominant land use and emphasis is recreation.

While assessing adverse effects of recreational actions to the environment, the BLM analyzes actions that increase human activity, especially in riparian areas. The BLM monitors recreational use, develops management plans, and evaluates and updates recreational potential in the Planning Area. Surface disturbance and other activities associated with the recreational resources program include, but are not limited to, the following actions: (1) managing recreational use, (2) permitting competitive recreational

events, (3) developing recreation trails, (4) constructing recreational sites, (5) maintaining developed and undeveloped recreational sites (campgrounds), (6) placing boundary signs and interpretive markers, (7) allowing commercial recreational uses, and (8) developing public water sources for recreational facilities.

6.30.1. Proposed Management Actions for Recreation under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following management actions for recreation resources that benefit threatened and endangered species:

- Manage recreational use to maintain or improve wetland habitat conditions along intensively used streams and reservoirs, consistent with the *Wyoming Standards for Healthy Rangelands* or other guidance.
- Mitigate surface-disturbing and disruptive activities associated with the construction, maintenance, and use of roads, campgrounds, interpretive sites, and other recreational facilities.
- Design recreational sites, recreation facility development, and recreational access to avoid riparian habitat areas or develop and manage them in a manner that minimizes effects on riparian habitats.
- Minimize noise and light pollution in sensitive areas (e.g., developed campgrounds, and river corridors) on a case-by-case basis using best available technology.
- Apply an NSO restriction at the time of lease offering on the following: Fishing and hunting access areas (8,034 acres), Five Springs Falls Campground (approximately 40 acres), The Cody Archery Range (102 acres), Recreation and Public Purpose lease areas for the Cody Shooting Complex (319 acres) and the Lovell Rod and Gun Club shooting range (136 acres).
- Apply an NSO restriction on areas within ¼ mile of campgrounds, trailheads, day use areas, and similar recreational sites.
- Manage areas within ¼ mile of campgrounds, trailheads, day use areas, and similar recreational sites as ROW avoidance/mitigation areas, except those related to recreation facility development and maintenance.
- In addition, under the Proposed RMP, the BLM would manage 13 areas as SRMAs, including five RMZs. Additionally, the BLM would manage five separate ERMAs; BLM-administered lands not included in separate ERMAs or SRMAs would be part of the greater Bighorn Basin ERMA. The Proposed RMP proposes the following protections for recreation resources that benefit threatened and endangered species:
    - Apply an NSO or CSU stipulation for Oil and Gas leasing in the Absaroka Foothills, Bighorn River, Middle Fork of the Powder River, Canyon Creek, The Rivers, Beck Lake, and Newton Lake Ridge SRMAs; the Tatman Mountain, Trapper Creek, Paint Rock, and Brokenback/Logging Road Area RMZs; and the Absaroka and Bighorn River ERMAs.
    - Manage the Absaroka Foothills, Bighorn River, West Slope (portions), South Bighorns, Middle Fork of the Powder River, Canyon Creek, and The Rivers; the Tour De Badlands, Tatman Mountain, Trapper Creek, Paint Rock, and Brokenback/Logging Road Area; and the Absaroka, Bighorn River, South Bighorns, Red Canyon Creek, and Basin Gardens areas as ROW avoidance/mitigation areas.

- Motorized vehicle use is limited to designated roads and trails in the Absaroka Foothills, Bighorn River, West Slope, South Bighorns, Middle Fork of the Powder River, Canyon Creek, The Rivers (portions), Beck Lake Ridge, and Newton Lake Ridge SRMAs, the Tour de Badlands, Tatman Mountain, Trapper Creek, Paint Rock, and Brokenback/Logging Road Area RMZs, and the Absaroka, South Bighorns, and Red Canyon Creek ERMAs.
- Minimize noise pollution in sensitive areas (e.g., special status species habitat, developed campgrounds, and river corridors) on a case-by-case basis using best available technology.

6.30.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that also apply to recreation management are listed below.

Canada Lynx

- The BLM shall allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas in LAUs unless the designation serves to consolidate unregulated use and improves lynx habitat through a net reduction of compacted snow areas. This is intended to apply to dispersed recreation, rather than existing ski areas. Winter logging activity is not subject to this restriction.
- In lynx habitat within an LAU, the BLM shall ensure that federal actions do not degrade or compromise landscape connectivity or linkage areas when planning and operating new or expanded recreation developments.
- The BLM shall ensure that trails, roads, and lift termini are designed to direct winter use away from diurnal security habitat.
- To protect the integrity of lynx habitat, the BLM shall ensure that (as new information becomes available) winter recreational special use permits (outside of permitted ski areas) that promote snow compacting activities in lynx habitat are evaluated and amended as needed.

Grizzly Bear

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.
- The BLM shall provide a packet of educational materials to authorized permittees in grizzly habitat, including, but not limited to, special recreation permittees, livestock permittees, and timber operators.
- In occupied grizzly bear habitat, and in areas of bear conflicts, the BLM shall install bear-resistant refuse containers in developed campgrounds and picnic areas where refuse containers are provided and maintained. In areas receiving dispersed recreational use, the BLM shall inform the public of proper storage techniques for food and refuse.

- The BLM shall ensure that operation plans and special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. All temporary living facilities under temporary use permits in occupied grizzly bear habitat will be required to practice proper food storage and keep all potential attractants stored so they are unavailable to bears. Edibles and/or garbage will be secured from access by grizzly bears. Bear proof refuse containers, and timely refuse collection to prevent overflow, shall be required.

Ute Ladies'-tresses

- Recreational site development will not be authorized in known Ute ladies'-tresses habitat.

6.30.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for recreation that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.30.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Recreational sites, trails, and actions do not typically occur in Canada lynx habitats, but occasionally a hiking trail can pass through suitable habitat and human use may disturb resident Canada lynx. Winter activities may cause short-term behavioral avoidance by Canada lynx where they occur. One of the greatest causes of adverse impacts to Canada lynx comes from recreationists pioneering unauthorized trails into unroaded habitats, causing animal disruption and habitat fragmentation. If off road use were to occur in Canada lynx habitat, this species could be disturbed and may avoid the area in which the disturbance occurred. However, this is unlikely because cross-country use is limited to certain uses. Minimal impacts might occur if an OHV traveled into lynx habitat to perform necessary tasks, and the existing conservation measures would prevent adverse impacts from occurring to lynx or their habitat. Conservation measures include ensuring that within an LAU, federal actions do not degrade or compromise landscape connectivity or linkage areas when planning and operating new or expanded recreation developments; that winter recreational special use permits that promote snow compacting activities in lynx habitat are evaluated and amended as needed; and that there is no net increase in groomed or designated over-the-snow routes and snowmobile play areas in LAUs unless the designation serves to consolidate unregulated use and improves lynx habitat through a net reduction of compacted snow areas. Implementing recreational management actions *may affect, but is not likely to adversely affect* the Canada lynx due to *insignificant effects (NLAA-i)*. This determination is based on the unlikely choice of lynx habitat for recreational development, and the conservation measures in place to protect the species and habitats.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Established recreational facilities recreational sites, trails, and actions do not typically occur in grizzly bear habitats. In the Absaroka Front area, recreation is managed for dispersed

recreation activity. Activities such as hunting, hiking, fishing, and hiking could does occur in grizzly bear habitat and the general increase in recreational use of BLM administered lands may increase with the potential for bear/human conflicts. Human intrusions can displace or disturb grizzly bears, especially in areas where human activity is concentrated or consistent. For example, hiking trails that pass through suitable habitat may disturb the grizzly bear. Few new recreational projects or activities are anticipated to take place in occupied grizzly bear habitat. One of the greatest potential causes for adverse impacts to grizzly bear comes from recreationists pioneering unauthorized trails into unroaded habitats, causing animal disruption and habitat fragmentation. If cross-country use were to occur in grizzly bear habitat, this species could be disturbed and may avoid the area in which the disturbance occurred. However, this is unlikely because cross-country use is limited to certain uses, reducing impacts to grizzly bear habitat and disrupt foraging and movement.

Conservation measures in occupied grizzly bear habitat and in areas of bear conflicts include installing bear-resistant refuse containers in developed campgrounds and picnic areas where refuse containers are provided and maintained, and in areas receiving dispersed recreational use, the BLM will inform the public of proper storage techniques for food and refuse. In addition, the BLM will ensure that special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. Implementing recreation management actions may affect, but is not likely to adversely affect the grizzly bear due to discountable effects (NLAA-d). This determination is based on the unlikely choice of grizzly bear habitat for recreation development, the dispersed nature of most recreation use, and the conservation measures in place to protect the species.

North American Wolverine – Established recreational sites, trails, and actions do not typically occur in wolverine habitats, but occasionally a hiking trail can pass through suitable habitat and human use may disturb resident wolverines. Other forms of recreation (i.e., backcountry skiing and snowmobiling) may adversely impact wolverines (Ruggiero et al. 2007). However, given the inaccessibility, including elevation and topography, within potential wolverine habitat in the planning area, the kinds of dispersed recreation described above will be uncommon, and no recreation projects are proposed. In the event that potential disturbances are proposed within potential wolverine habitat, the MA that will "postpone or modify projects that may affect special status species" will minimize these potential disturbances. However, implementing recreational management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the unlikely choice of wolverine habitat for recreational development.

Ute Ladies'-tresses – No known populations of the Ute ladies'-tresses occur near developed or proposed recreational sites. Extensive trail systems would not be constructed within areas where Ute ladies'-tresses are known to occur. Ute ladies'-tresses may be indirectly impacted by the spread of invasive species from recreational actions. Invasive species may be spread by hikers and/or their vehicles, degrading potentially suitable Ute ladies'-tresses habitats. Recreation site development will not be authorized in known Ute ladies'-tresses habitat. In addition, the BLM will create programs that will strive to protect the Ute ladies'-tresses habitat and prevent new trails from being constructed within 0.25 mile from known occurrences of the Ute ladies'-tresses. One of the greatest potential causes for adverse impacts to Ute ladies'-tresses comes from recreationists pioneering unauthorized trails into unroaded habitats, causing animal disruption and habitat fragmentation. If cross-country use were to occur in Ute ladies'-tresses habitat, an undiscovered population or individual plants could be trampled or potential habitat could be altered. Implementing recreational management actions *may affect, but is not likely to adversely affect* the Ute ladies'-tresses due to *discountable effects (NLAA-d)*. This determination is based on the unlikely event BLM-authorized actions occur in Ute ladies'-tresses

habitats, the current lack of known occurrence of the species within the Planning Area, and the conservation strategies implemented if surface-disturbing activities were to occur in suitable habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Dispersed recreation on nonfederal lands may impact threatened and endangered species, especially if this action occurs in occupied habitats. However, these types of actions are anticipated to be localized in nature and dispersed throughout the Planning Area. Increased human presence and use of particular areas during sensitive time periods (e.g., breeding/birthing, nesting, winter, flowering periods) would contribute to adverse impacts to threatened and endangered species.

6.31. Lands with Wilderness Characteristics

The BLM inventory identified approximately 476,349 acres (in 51 lands with wilderness characteristics) of BLM-administered land with wilderness characteristics in the Planning Area, or approximately 18 percent of total BLM-administered land in the Planning Area.

The BLM Land Use Planning Handbook (H-1601-1) states that the BLM must consider the management of lands with wilderness characteristics during the land use planning process. The criteria used to identify these lands are essentially the same criteria as identified in the recently released BLM Manual 6301. In addition to the inventory requirements in H-1601-1, on December 22, 2010 the Secretary of the Interior released Secretarial Order 3310, Protecting Wilderness Characteristics on Lands Managed by the Bureau of Land Management. This Secretarial Order emphasizes the need to protect wilderness characteristics where they occur on BLM-administered land, and directs the BLM to regularly maintain its wilderness resource inventories. Secretarial Order 3310 further directs the BLM to protect lands with wilderness characteristics through the land use planning and other decision processes unless the impairment of those characteristics is determined to be appropriate and consistent with other laws and resource management considerations. To address this Secretarial Order, the BLM has released manuals 6301, 6302, and 6303; these manuals implement the Secretarial Order.

6.31.1. Proposed Management Actions for Lands with Wilderness Characteristics under the Bighorn Basin Proposed RMP

There are no proposed management actions for lands with wilderness characteristics under the Bighorn Basin Proposed RMP.

6.31.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the conservation measures for the threatened and endangered species analyzed in this BA specifically apply to lands with wilderness.

6.31.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for lands with wilderness characteristics that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.31.4. Impact Analysis and Effects Determination

Canada Lynx – The Proposed RMP does not implement special management prescriptions for lands with wilderness characteristics; therefore, *no effect (NE)* is anticipated to the Canada lynx.

Gray Wolf – The Proposed RMP does not implement special management prescriptions for lands with wilderness characteristics; therefore, this *is not likely to jeopardize (NJ)* the gray wolf.

Grizzly Bear – The Proposed RMP does not implement special management prescriptions for lands with wilderness characteristics; therefore, *no effect (NE)* is anticipated to the grizzly bear.

North American Wolverine – The Proposed RMP does not implement special management prescriptions for lands with wilderness characteristics; therefore, this *is not likely to jeopardize (NJ)* the North American wolverine.

Ute Ladies'-tresses – The Proposed RMP does not implement special management prescriptions for lands with wilderness characteristics; therefore, *no effect (NE)* is anticipated to the Ute ladies'-tresses.

6.32. Livestock Grazing Management

Cattle are the primary grazers on public lands, but grazers also include sheep, domestic horses, and small numbers of bison. Goats and sheep are sometimes authorized for the purpose of suppressing weeds. The relative number of these grazing animals has varied in response to their economic value as a commodity and their use in ranching operations.

All livestock grazing allotments in the Planning Area are classified as perennial allotments. Term permits/leases authorize grazing use based on perennial vegetation. Grazing preference is attached to base property owned or controlled by a permittee or lessee. Base property in the Planning Area is land based. At present, the BLM administers 687 grazing allotments covering 3.2 million acres in the Planning Area. Total active use for the Planning Area is 305,264 AUMs. The number of AUMs authorized annually in the Planning Area has remained constant, but there has been a slight decline since 1989. This decline in authorized AUMs is due primarily to user requests for temporary non-use and unfavorable climatic conditions. Annual fluctuations in authorized AUMs can develop from user demands, climatic conditions, and/or from the collection of monitoring information.

Livestock grazing uses several resources directly and some resources indirectly. Livestock use rangeland vegetation for forage, but also might use riparian areas and wetlands for sources of water and forage. The BLM authorizes livestock grazing on specific allotments during different seasons. Grazing seasons vary with elevation and geographical change, resource needs, and user preference. Higher-elevation allotments are generally grazed during summer and fall. Lower-elevation allotments may be grazed during any season, but are generally used in fall, winter, and spring. Most of the allotments in the Planning Area are operating under grazing strategies that incorporate rest, seasonal rotations, deferment, and prescribed use levels that provide for adequate plant recovery time to enhance rangeland health.

Actions associated with livestock grazing management include converting to new types of livestock and authorizing livestock grazing, and adjusting season of use, distribution, kind, class, and number of livestock. Other actions include vegetative manipulation treatment projects using prescribed fire, mechanical treatments, seeding, or chemical treatments to modify plant communities. The BLM has constructed fences, water developments, spring enclosures, and cattleguards.

6.32.1. Proposed Management Actions for Livestock Grazing Management under the Bighorn Basin Proposed RMP

The Bighorn Basin Preferred Alternative proposes the following management actions for livestock grazing that benefit threatened and endangered species:

- In cooperation, consultation, and coordination with permittees/lessees, cooperators, and interested public, develop and implement appropriate livestock grazing management actions to enhance rangeland health, improve forage for livestock, and meet other multiple use objectives by using the Wyoming Guidelines for Livestock Grazing Management, and other appropriate BMPs.
- Utilize a rangeland health assessment, resource monitoring, or analysis to determine if livestock grazing adjustments in amounts, kinds, or season are necessary.
- The Planning Area is closed to grazing in the Bighorn River tracts (4,805 acres).
- Manage livestock grazing to support other resource objectives and allow livestock grazing in areas closed to grazing as a tool to maintain or improve resource conditions.
- Prohibit the placement of salt, mineral, or forage supplements within ¼ mile of water, wetlands, riparian areas, reclaimed or reforested areas, or as determined by the authorized officer.
- Design range improvement projects, including vegetation treatments, to meet multiple-use objectives, mitigate impacts to other resource values, and meet allotment management objectives.

6.32.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to livestock grazing are listed below.

Canada Lynx

- The BLM shall ensure that livestock use in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components is not allowed. This regeneration may take three years or longer and will depend on site-specific conditions.
- The BLM shall ensure that grazing in aspen stands is managed to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones.
- Within lynx habitat, the BLM shall ensure that livestock grazing in riparian areas and willow patches is managed to maintain or achieve mid seral or higher condition to provide cover and forage for prey species.
- On projects where over-snow access is required, the BLM shall ensure use is restricted to designated routes.
- Predator control activities, including trapping or poisoning on domestic livestock allotments on federal lands within lynx habitat, shall be conducted by USFWS Wildlife Services personnel in accordance with USFWS recommendations established through a formal section 7 consultation process.
- The BLM shall ensure that the potential importance of shrub-steppe habitats in the lynx habitat matrix and in providing landscape connectivity between blocks of lynx habitat is evaluated and considered as integral to overall lynx habitat where appropriate. Livestock grazing within shrub-

steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.

- In high-elevation riparian areas, especially those subject to grazing, the BLM shall ensure that weed assessments and weed control are conducted to optimize habitat for snowshoe hares.

Grizzly Bear

- The BLM shall implement strategies to reduce human-bear and domestic livestock-bear conflicts by conducting an evaluation of the causes of such conflicts when they do occur and determining what can be done to avoid or reduce such conflicts in the future. Currently these conflicts are discussed at the NW Wyoming Level One Streamlining Team meetings held approximately every 45 to 60 days.
- All permit holders that conduct activities on public lands in occupied grizzly bear habitat that could result in livestock carcasses being left in locations where bears might be attracted to them shall be informed that all livestock carcasses or parts of carcasses shall be either packed, dragged, or otherwise transported to a location a minimum of ½ mile from any inhabited dwelling, sleeping area, tent, road, trail, or recreation site in as timely a manner as possible, unless otherwise directed by a BLM range/wildlife specialist or ranger. Carcasses shall be moved at least 100 yards from live water. Other options for carcass disposal may include using explosives or burning the carcass at the discretion of a BLM range/wildlife specialist or ranger. In cases of uncertainty about carcass disposition the permit holder (or lessee) shall contact the appropriate BLM field office.
- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.

Ute Ladies'-tresses

- The BLM will ensure that grazing management practices will restore, maintain, or improve plant communities. Grazing management strategies consider hydrology, physical attributes, and potential for the watershed and the ecological site.
- The BLM will ensure that grazing management practices will incorporate the kinds and amounts of use that will restore, maintain, or enhance habitats to assist in the recovery of federally threatened and endangered species or the conservation of federally-listed species of concern and other State-designated special status species. Grazing management practices will maintain existing habitat or facilitate vegetation change toward desired habitats. Grazing management will consider threatened and endangered species and their habitats.
- The BLM will maintain biological diversity of plant and animal species; support the Wyoming Game and Fish Department strategic plan population objective levels to the extent practical and to the extent consistent with BLM multiple use management requirements; maintain, and where possible, improve forage production and quality of rangelands, fisheries, and wildlife habitat; and to the extent possible, provide habitat for threatened and endangered and special status plant and animal species on all public lands in compliance with the Endangered Species Act and approved recovery plans.
- Grazing will be intensively managed within known habitat containing populations from July through September, to allow plants to bloom and go to seed.

- The BLM will add the following two conservation measures to grazing permit renewals in allotments with known Ute ladies'-tresses populations.
  - The BLM will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Ute ladies'-tresses populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Ute ladies'-tresses populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Ute ladies'-tresses populations and potential overgrazing of the areas occupied by the species. Surveys for Ute ladies'-tresses will be conducted in potential Ute ladies'-tresses prior to livestock operations related construction projects.
  - The BLM will not increase permitted livestock stocking levels in any allotment with pastures containing known Ute ladies'-tresses populations without consulting with the Service.

6.32.3. Best Management Practices

The following BMPs have been identified:

- Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the state of Wyoming.
- Utilize *The National Range and Pasture Handbook* to determine applicable BMPs for livestock grazing, accessible at: http://www.glti.nrcs.usda.gov/technical/publications/nrph.html.
- Utilize *Best Management Practices for Grazing* to determine applicable BMPs for livestock grazing accessible at: http://deq.state.wy.us/wqd/watershed/Downloads/NPSpercent20 Program/92602.pdf

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.32.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Canada Lynx – Livestock grazing is not likely to occur above 9,500' elevation; however if livestock grazing did occur in LAUs it would be expected to cause short-term disturbance to resident lynx, if present, and have impacts on vegetation, some of which is important to either snowshoe hare or lynx Livestock management actions may affect only a portion of the LAUs, where vegetation impacts will likely occur within marginal lynx foraging habitat, i.e., sagebrush/grasslands, aspen and willow communities. Conservation measures include ensuring that livestock use in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components is not allowed; ensuring that grazing in aspen stands is managed to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones; and ensuring within lynx habitat, that livestock grazing in riparian areas and willow patches is managed to maintain or achieve mid seral or higher condition to provide cover and forage for prey species. Implementing livestock management actions *may affect, but is not likely to adversely affect* the lynx due to *discountable effects (NLAA-d)*.

This determination is based on the unlikely event livestock management actions will take place in potential lynx habitats and the existing conservation measures in place to protect the species.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Livestock grazing management actions that may occur in occupied grizzly bear habitat would be expected to disturb resident grizzly bears. Livestock grazing management occurs in grizzly bear habitat and may affect the grizzly bear in several ways. Livestock grazing activities can disturb or displace grizzly bears removing them from preferred habitats, or can lead to bear/human or bear/livestock encounters that can result in bears being removed. Although the BLM is not responsible for trapping and relocating depredating grizzly bears, actions such as the authorization of livestock grazing permits and the installation of rangeland improvement projects in grizzly bear habitat could lead to the development of problem behavior patterns in grizzly bears. Consequently, BLM actions could lead to trapping/relocating and/or euthanizing of grizzly bears.

Grizzly bear activity and conflict has been on the rise along the western edge of the planning area. The Wyoming Game and Fish Department provided grizzly bear human and livestock conflict data for the previous five years from 2008 through 2012. This data represents the recent increase in grizzly bear activity along the Absaroka and Beartooth front. Within the last five years and within BLM grazing allotments there were 71 livestock related conflicts in the planning area. Of the 71 conflicts, 66 occurred within permitted grazing allotments administered by the Cody Field Office, and 5 within unpermitted BLM grazing allotments in the Worland Field Office. According to WGFD's data for all documented captures, relocations and removals during this 5 year period, there were 3 instances resulting in bear mortalities on BLM grazing allotments, however none of these were due to conflict with livestock.

In the BLM's statewide programmatic Grizzly Bear BA (BLM 2006), the BLM determined that the issuance of grazing permits could Likely Adversely Affect (LAA) grizzly bears on some allotments. Implementing some of the livestock management actions within the scope of this RMP *is likely to adversely affect* (LAA) the grizzly bear. This determination is based on livestock grazing management actions taking place in grizzly bear habitats. Grizzly bear general distribution overlaps approximately 122 grazing allotments in the Bighorn Basin Planning Area, resulting in approximately 195,967 acres of land shared between the two elements. Appendix A provides a list of the livestock grazing allotments that overlap the general distribution of grizzly bears in the Bighorn Basin Planning Area. The BLM will continue section 7 consultation with the USFWS at the site-specific level for grizzly bear.

North American Wolverine – Livestock grazing management actions that may occur in potential wolverine habitat could disturb resident wolverine in the short-term, but livestock management, i.e., active herding and the implementation of range projects is not expected to occur in potential wolverine habitat, primarily because these habitats are generally at the high elevations where snow cover is preferred by the species or above 9500' elevation and have extreme topography Livestock management actions may affect only a portion of the territory occupied by wolverine. Implementing livestock management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the unlikely event livestock management actions will take place in potential wolverine habitats.

Ute Ladies'-tresses – Livestock grazing use if often heavy in riparian areas due to increased forage production and water availability. Livestock grazing in riparian areas could increase soil erosion, stream bank degradation, and the spread of invasive species; however, implementing the *Standards for Healthy*

Rangelands will reduce these impacts. Livestock grazing may adversely impact the Ute ladies'-tresses by foraging and trampling individual plants. The programmatic BA for Ute Ladies'-tresses determined that the foraging and trampling of individual plants by livestock may harm or reduce an individual plant fitness or survival. Fencing, development of alternative water supplies for livestock, herding, placing feed and mineral supplements away from water sources, and adjusting pasture boundaries and season of use will minimize the impacts to riparian areas. There are no known occurrences of Ute ladies'-tresses in the planning area. If plants are identified, conservation measures will be added to grazing permit renewals in allotments with known Ute ladies'-tresses populations to restrict where mineral supplements or new water sources can be located and to consult with the USFWS about any potential increases in livestock stocking levels. In addition, grazing will be intensively managed within known habitat containing populations from July through September to allow plants to bloom and go to seed. Implementing livestock grazing management actions *may affect, but not likely to adversely affect (LAA)* the Ute ladies'-tresses. This determination is based on the potential for livestock grazing management actions to occur in Ute ladies'-tresses habitat and result in destruction of individuals. Scientific literature regarding this species indicates that properly managed livestock grazing management may benefit the species by reducing competing vegetation.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Livestock grazing on private lands may adversely affect threatened or endangered species. Grazing in riparian areas could impact stream bank stability, trample vegetation, and increase sedimentation, all of which could adversely impact threatened and endangered species that occur in these habitats. Livestock grazing in listed plant species habitat on nonfederal lands could adversely impact this species.

6.33. Special Designations – Areas of Critical Environmental Concern and Other Management Areas

FLPMA Section 103(a) defined an ACEC as an area within public lands where special management attention is required to protect and prevent irreparable damage to important and relevant historical, cultural, and scenic values, fish and wildlife and other natural systems or processes, and to protect life and safety from natural hazards. BLM regulations for implementing FLPMA ACEC provisions are at 43 CFR 1610.7-2(b).

The BLM manages ACECs to provide special management for relevant and important values, resources, natural systems, and natural hazards (referred to here as values of concern). This section also addresses impacts related to three other Management Areas (Craig Thomas Little Mountain SMA, Chapman Bench Management Area, and Absaroka Front Management Area) closely related to the existing and proposed ACECs. The CYFO and WFO manage nine ACECs in the Planning Area. Through the public and internal scoping processes, the BLM received a number of nominations for new or expanded ACECs. The BLM reviewed all such nominations to determine if they met the importance and relevance criteria required for consideration as an ACEC. Of the nominations received, eight new proposed ACECs met the criteria for consideration, as did areas adjacent to four existing ACECs. The areas designated for specific management under the Bighorn Basin Proposed RMP are detailed below.

Big Cedar Ridge ACEC (Existing)

The Big Cedar Ridge ACEC is on 264 acres of BLM-administered land southwest of Ten Sleep, Wyoming, in Washakie County, in an area of abundant paleontological resources, particularly fossilized plants.

Management objectives for the Big Cedar Ridge ACEC are to protect and maintain its paleontological resources and to provide educational, hands-on experiences for visitors and groups.

Red Gulch Dinosaur Tracksite ACEC (Existing)

The Red Gulch Dinosaur Tracksite ACEC is on 1,798 acres of BLM-administered land off U.S. Highway 14, approximately 10 miles east of Greybull, Wyoming, in Big Horn County. The Red Gulch Dinosaur Tracksite is the largest tracksite in Wyoming, and one of only a few worldwide from the Middle Jurassic Period (160 million to 180 million years old). Management objectives and challenges for this ACEC are to protect and maintain paleontological resources.

Sheep Mountain Anticline ACEC (Existing)

The Sheep Mountain Anticline ACEC is on approximately 11,520 acres of BLM-administered land north of Greybull, Wyoming. The ACEC is composed of a classic Laramide anticline, an upward folded rock structure often featured in geology textbooks. The management objective for this ACEC is to protect its geological features.

Spanish Point Karst ACEC (Existing)

The Spanish Point Karst ACEC is on approximately 6,298 acres of BLM-administered land on the west slope of the Big Horn Mountains in Big Horn County. The area consists of deeply incised canyon and mountainous terrain. Management objectives for the Spanish Point Karst ACEC are to protect the cave system, sinking stream segments, and groundwater quantity and quality services the area provides.

Brown/Howe Dinosaur Area ACEC (Existing)

The Brown/Howe Dinosaur Area ACEC is on 5,501 acres of BLM-administered land north of Shell, Wyoming. The area was designated to protect paleontological resources, mostly notably dinosaur fossils from the suborder Theropoda and Sauropoda, which have been recovered there.

Carter Mountain ACEC (Existing)

The Carter Mountain ACEC consists of approximately 10,867 acres of BLM-administered lands on the east slope of the Absaroka Mountains. The BLM manages the area to protect areas of alpine tundra and fragile soils, much of which remains in pristine condition.

Five Springs Falls ACEC (Existing)

The Five Springs Falls ACEC consists of 163 acres of BLM-administered public lands on the west slope of the Big Horn Mountains east of Lovell, Wyoming. The BLM objective for managing the ACEC is to protect existing populations of four near-endemic rare and sensitive plant species in the Five Springs Falls area.

Upper Owl Creek ACEC (Existing)

The Upper Owl Creek ACEC includes 13,758 acres of BLM-administered public lands in the upper foothills of the Absaroka Mountains surrounding the Owl Creek, Rock Creek, Klicker Creek, Slab Creek, and Vass Creek drainages. BLM management objectives for the area are to protect overlapping and

important big game habitats and migration corridors, fisheries habitat, shallow soils, alpine vegetation and rare plants, cultural resources and Native American traditional values, primitive recreational opportunities, and scenic quality.

Little Mountain ACEC (Existing with Proposed Expansion)

The Little Mountain ACEC consists of approximately 21,475 acres of BLM-administered land on the west slope of the Big Horn Mountains northeast of Lovell, Wyoming. BLM objectives for managing the ACEC are to protect and manage important caves and cave-related paleontological resources, cultural resources, and the maintenance of scenic values.

The proposed expansion of the Little Mountain ACEC to be managed as the Craig Thomas Little Mountain SMA includes areas east and south of the existing ACEC. This expansion area is proposed due to identified wildlife, special status species, recreation, vegetation, and scenic values. A number of BLM sensitive animal species and regionally endemic plant species can be found in the area. Potential Canada lynx habitats.

Chapman Bench Management Area (MA) (Proposed)

The proposed Chapman Bench MA is north of Heart Mountain National Landmark and east of Highway 120 in an area of predominantly BLM-administered land. The area contains sagebrush habitat used by sensitive bird species and other wildlife.

Clarks Fork Canyon ACEC (Proposed)

The proposed Clarks Fork Canyon ACEC is in the far northwestern portion of the Planning Area. The ACEC is proposed to protect the area's geologic, wildlife and special status species habitat, open space, and recreational resources and uses. Special status species in the proposed ACEC include plant species (such as Shoshonea and Ute ladies'-tresses).

Paleocene-Eocene Thermal Maximum (PETM) ACEC

The proposed PETM ACEC consists of the Clarks Fork Basin/Polecat Bench, Foster Gulch, and McCullough Peaks South areas each considered for ACEC designation. The ACEC is proposed to protect the area's stratigraphic contact zone and the paleontological and geochemical values associated with these rock layers, which are exposed in only a few areas worldwide.

Sheep Mountain (Proposed)

The proposed Sheep Mountain ACEC is immediately west of Buffalo Bill Reservoir in the northwestern quadrant of the Planning Area. The area is proposed to protect important wildlife habitat and desired plant communities. The area contains big game winter, transition, and parturition ranges, and migration corridors that link USFS land and YNP with available habitat for wintering and raising young. The area also contains grizzly bear, potential Canada lynx habitat and gray wolf habitat.

Absaroka Front MA (Proposed)

The proposed Absaroka Front MA includes mountain and foothills just east of the Shoshone NF boundary from the Wind River Reservation boundary to the south, and north to the Montana state line.

This area is associated with forested and riparian habitats in higher precipitation zones. Grizzly bear are found in the Absaroka and Beartooth mountain areas and have been observed along the western part of the Owl Creek Mountains. Absaroka beardtongue also is known to occur in the Absaroka Range.

6.33.1. Proposed Management Actions for Areas of Critical Environmental Concern under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for ACECs and Other Management Areas that benefit threatened and endangered species.

Big Cedar Ridge ACEC

- Apply an NSO restriction on the 264-acre fossil concentration area.
- Close the fossil concentration area to geophysical exploration.
- Manage the 264-acre fossil concentration area as a ROW exclusion area.
- Motorized vehicle use is limited to existing roads and trails in the ACEC.
- Pursue a withdrawal from appropriation under the mining laws for the ACEC.
- Close the 264-acre fossil concentration area to mineral materials disposal and related exploration and development activities.

Red Gulch Dinosaur Tracksite ACEC

- Motorized vehicle use is limited to designated roads and trails in the ACEC.
- Prohibit surface-disturbing activities within the ACEC, except the construction of roads, trails, interpretive signs, and other facilities to enhance public education and recreation, and activities allowed under a paleontological resources use permit.
- Prohibit the use of heavy equipment to construct fire lines and the use of chemical and dye retardants in the ACEC.
- Close the interpretive area of the ACEC to livestock grazing.
- Apply an NSO restriction for mineral leasing, exploration, and development on BLM-administered lands in the Sundance Formation of the ACEC.
- Pursue a withdrawal from appropriation under the mining laws for the ACEC.

Sheep Mountain Anticline ACEC

- Motorized vehicle use is limited to designated roads and trails in the ACEC.
- Prohibit surface-disturbing activities such as geophysical exploration (except casual use), mineral materials disposal, and construction activities (except those related to development of recreation or wildlife habitat) above caves and cave passages on BLM-administered lands in the ACEC.
- Pursue a withdrawal from appropriation under the mining laws for the ACEC.

Spanish Point Karst ACEC

- Manage basal vegetative cover in the ACEC to maximize (or maintain) ground cover in good or better ecological condition, increase with the potential of the ecological site.
- Pursue a withdrawal from appropriation under the mining laws for the ACEC. The withdrawal will involve the federal mineral estate under private surface and under federal surface administered by the USFS and the BLM.
- The ACEC is closed to oil and gas leasing.
- The ACEC is closed to geophysical exploration.
- Manage the ACEC as a ROW avoidance/mitigation area.

Brown/Howe Dinosaur Area ACEC

- Motorized vehicle use is limited to designated roads and trails in the ACEC.
- Mitigate surface-disturbing activities in the ACEC.
- Do not sell or exchange public lands within the ACEC unless such disposal would be consistent with the management objectives and would improve management capability and resource protection in the area.
- On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for the ACEC.

Carter Mountain ACEC

- Restrict the use of heavy equipment in the ACEC during fire suppression operations to protect fragile soils and alpine tundra.
- Approximately 840 acres in the ACEC are identified for possible acquisition to improve management through consolidation of land ownership.
- Manage the ACEC as a ROW avoidance/mitigation area.
- Motorized vehicle use is limited to designated roads and trails in the ACEC with seasonal closures subject to the travel management plan.
- Allow some surface-disturbing activities other than mineral leasing or ROW if the effects can be avoided or mitigated based on site-specific analysis for the protection of alpine tundra.
- Require approval before snow can be removed from BLM-administered roads in big game crucial winter range in the ACEC.
- The ACEC is closed to mineral leasing and closed to mineral materials disposal.
- Pursue a withdrawal from appropriation under the mining laws for 4,998 acres of the ACEC.

Five Springs Falls ACEC

- During fire suppression operations, restrict the use of heavy equipment within the ACEC. Use prescribed fire as appropriate to accomplish identified multiple use management objectives.
- Manage the ACEC as a ROW avoidance/mitigation area.
- Pursue a withdrawal from appropriation under the mining laws for the ACEC.

- Do not allow climbing, except for the purposes of approved monitoring and research, on the cliff that forms Five Springs Falls.
- Prohibit surface-disturbing activities in the ACEC such as geophysical exploration (except casual use) and construction activities (except those related to development of recreation or interpretation of rare plants).
- The ACEC is closed to mineral materials disposal and closed for mineral leasing.
- Motorized vehicle use is limited to designated roads and trails in the ACEC.

Little Mountain ACEC and Craig Thomas Little Mountain SMA

- Manage the Little Mountain ACEC within the existing ACEC boundary plus apply specific management to 21,476 additional acres in the Craig Thomas Little Mountain SMA.
- During fire suppression operations, restrict the use of heavy equipment over important caves and cave passages within the ACEC and SMA.
- Motorized vehicle use is limited to designated roads and trails in the ACEC and SMA.
- Manage the ACEC as a ROW avoidance/mitigation area and the SMA as a renewable energy exclusion area.
- Apply a CSU stipulation to portions of the Craig Thomas Little Mountain SMA (19,467 acres) and manage the remainder as closed for oil and gas leasing (59,004 acres).
- On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for the ACEC and SMA.

Upper Owl Creek ACEC

- Motorized vehicle use is limited to designated roads and trails in the ACEC.
- Limit or prohibit surface-disturbing activities in the ACEC to protect fragile soils, alpine tundra, important wildlife habitat, and scenic values.
- Pursue withdrawals from appropriation under the mining laws for portions of the ACEC on a case-by-case basis.
- Require a detailed activity plan before approval of any proposal for major surface-disturbing activity in the ACEC.
- Manage the Upper ACEC as a ROW avoidance/mitigation area.
- The ACEC is closed for oil and gas leasing.

Chapman Bench Management Area

- Manage a portion of the Chapman Bench area as the Chapman Bench Management Area (3,425 acres of BLM-administered surface ownership).
- Manage the area for the retention and success of the mountain plover, long-billed curlew, and other sensitive species habitat.
- The area is closed to mineral materials disposal and open to mineral leasing with an NSO restriction.
- Pursue a withdrawal from appropriation under the mining laws for the area.

- Manage the area as a renewable energy avoidance/mitigation area.
- Manage the area as a ROW avoidance/mitigation area.
- Stipulate, where feasible, vegetative treatments, invasive species control, fuels management, and maintenance of existing facilities in the area.

Clarks Fork Canyon ACEC

- Designate the Clarks Fork Canyon area as an ACEC (4,746 acres).
- Motorized vehicle use is limited to designated roads and trails in the ACEC. Continue to implement the seasonal closure within the Bald Ridge Area.
- The ACEC is closed to mineral materials disposal and closed for mineral leasing.
- On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for ACECs and special status species habitat.
- Manage the ACEC as a renewable energy exclusion area.
- The ACEC is closed to geophysical exploration.
- Seasonally stipulate, where feasible, vegetative/silviculture treatments, invasive, nonnative pest species control, fuels management, and maintenance of existing facilities.

Paleocene-Eocene Thermal Maximum (PETM) ACEC

- Designate portions of the Clarks Fork Basin/Polecat Bench, Foster Gulch, and McCullough Peaks South areas as the PETM ACEC (14,906 acres).
- Travel is limited to designated roads and trails in the McCullough Peaks Travel Management area.
- Apply an NSO restriction on the ACEC. Grant exceptions on a case-by-case basis.
- The ACEC is closed to mineral materials disposal.

Sheep Mountain ACEC

- Designate the Sheep Mountain area as an ACEC (including 25,960 of federal mineral estate and 14,201 acres of BLM-administered surface ownership).
- Motorized vehicle use is limited to designated roads and trails in the ACEC.
- The ACEC is closed to mineral materials disposal and closed for mineral leasing.
- On a case-by-case basis, pursue a withdrawal from appropriation under the mining laws for ACECs and special status species habitat.
- Allow surface-disturbing activities consistent with the goals of the ACEC. Limit surface-disturbing activities to slopes of 15 percent or less, except where needed to improve watershed function, wildlife habitat, or land health (e.g., including forestland management).
- Manage the ACEC as a renewable energy avoidance/mitigation area.
- Manage the ACEC as a ROW avoidance/mitigation area.
- Stipulate, where feasible, vegetative/silviculture treatments, invasive species control, fuels management, and maintenance of existing facilities.

Absaroka Front Management Area

- Manage a portion of the Absaroka Front as the Absaroka Front Management Area (130,872 acres of BLM-administered surface ownership).
- A portion of the area (87,021 acres) is unavailable for mineral leasing.
- Apply a mix of CSU (111,410 acres), TLS (4,857 acres), and NSO (41,177 acres) stipulations.
- Motorized vehicle use is partially closed and limited to designated roads and trails on the rest of the area.
- Manage the area as a renewable energy exclusion area.

6.33.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). Conservation measures for the threatened and endangered species analyzed in this BA that apply to Special Designations - Other Management Areas are listed below.

Ute Ladies'-tresses

- No Surface Occupancy will be allowed within special management areas (e.g., known threatened or endangered species habitat).

6.33.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for ACECs that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.33.4. Impact Analysis and Effects Determination

The management actions and conservation measures listed above were taken into consideration for the impact analysis and effects determinations. A comprehensive list of conservation measures committed to by the BLM is provided in Section 9.0.

Threatened and Endangered Species – Management of ACECs and Other Management Areas is not anticipated to detrimentally impact threatened or endangered species or their habitats. Management of these areas may have beneficial effects on threatened and endangered species due to access restrictions, which would limit conflicts with human presence; limitations on surface disturbance, which would maintain species habitats. Canada lynx denning habitat, foraging habitat, and migration corridors would have further protections by the proposed expansion of the Carter Mountain ACEC (5,706 acres) and the Little Mountain ACEC (50,575 acres) by limiting disturbances associated with rights-of-ways, closing the ACECs to mineral leasing and limiting access. Gray wolf denning, foraging, and dispersal habitat would be further protected by the proposed expansions of the Rattlesnake Mountain ACEC (19,137 acres) and Sheep Mountain ACEC (25,153 acres). Grizzly bear denning, foraging, and dispersal habitat would be further protected by the expansion of the Carter Mountain ACEC (5,706 acres) and the Rattlesnake Mountain ACEC (19,137 acres) by limiting disturbances associated with rights-of-ways, closing the ACECs to mineral leasing and limiting access. Implementing ACEC management actions *may affect, but is not likely to adversely affect* threatened and endangered species due to *beneficial effects*

(NLAA-b). This determination is based on the expansion of threatened and endangered species habitat protection.

Proposed Species – Management of ACECs and Other Management Areas is not anticipated to detrimentally impact proposed species. Expansions of the Carter Mountain ACEC (5,706 acres), Sheep Mountain ACEC (25,153 acres) and the PETM ACEC (14,906 acres) include additional protections over North American Wolverine habitat. Management of ACECs *is not likely to jeopardize proposed species (NJ)* or their habitats. Management of these areas may have beneficial effects on proposed species due to access restrictions, limitations on surface disturbance, and management objectives specifically designed to benefit the resources contained within.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. No actions associated with ACECs or Other Management Areas on nonfederal lands are anticipated to affect threatened and endangered species.

6.34. Special Designations – National Back Country Byways

The BLM began a back country byway program in 1989 to focus on enhancing recreational opportunities. Two years later, Section 1047 of the Intermodal Surface Transportation Efficiency Act of 1991 established the National Scenic Byway System. Section 1032 of the Act recognized the BLM's Back Country and Scenic Byways program as a component of the National Scenic Byway System. The objectives of the BLM's Back Country and Scenic Byways program include:

- 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 visitors' recreation experiences and communicate the multiuse management message through effective interpretative programs.
- Manage visitor use along the National Back Country Byway to minimize impacts to the environment and to protect visitors.
- Contribute to the National Scenic Byway System in a way that is uniquely suited to BLM-administered national public lands.

The BLM currently manages one National Back Country Byway in the Planning Area – the Red Gulch/Alkali National Back Country Byway. This route is a 32 mile gravel road that provides a scenic drive through the foothills of the Big Horn Mountains and access to three WSAs and the Red Gulch Dinosaur Track Site ACEC. Active promotion of the Red Gulch/Alkali National Back Country Byway has been limited to available brochures and interpretive kiosks at either end of the route, and its proximity to the Red Gulch Dinosaur Tracksite, which attracts thousands of visitors per year.

Under the Bighorn Basin Proposed RMP, the BLM would designate the Hyattville Logging Road as a primitive Back Country Byway. The designated area includes the roadway up to the National Bighorn Forest Service connecting with FS Rd 408, which leads back to U.S. Highway 16, consisting of 25 miles of Type II and III gravel road (10 miles BLM, 8 miles USFS, 3 miles private, 4 miles state of Wyoming). The BLM would manage the area in cooperation with Big Horn County, the Bighorn National Forest Service, the state of Wyoming, and affected private landowners with the objective of encouraging responsible motorized recreational use of the proposed Byway, while protecting and displaying the scenic, cultural, geologic, multiple uses, and crucial wildlife habitat values that occur in the area.

6.34.1. Proposed Management Actions for National Back Country Byways under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not propose protections for National Back Country Byways that benefit threatened and endangered species.

6.34.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to National Country Byways.

6.34.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for national back country byways that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.34.4. Impact Analysis and Effects Determination

The conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Threatened and Endangered Species – Management of National Back Country Byways is not anticipated to impact threatened or endangered species or their habitats. The Proposed RMP designates the Hyattville Logging Road as a National Back Country Byway and considers additional designations on a case-by-case basis. In addition, designation of the Red Gulch/Alkali Road as a National Back Country Byway would continue. Implementing National Back Country Byways management actions *may affect, but is not likely to adversely affect* threatened and endangered species due to *beneficial effects (NLAA-b)*. This determination is based on the expansion of threatened and endangered species habitat protection.

Proposed Species – The Proposed RMP designates the Hyattville Logging Road as a National Back Country Byway and considers additional designations on a case-by-case basis. In addition, designation of the Red Gulch/Alkali Road National Back Country Byway would continue. Management of National Back Country Byways *is not likely to jeopardize proposed species (NJ)* or their habitats. Management of these areas may have beneficial effects on proposed species due to access restrictions, limitations on surface disturbance, and management objectives specifically designed to benefit the resources contained within.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. No actions associated with National Back Country Byways on nonfederal lands are anticipated to affect threatened and endangered species.

6.35. Special Designations – National Historic Landmarks

The Heart Mountain Relocation Center is a National Historic Landmark designated by the Secretary of the Interior at 36 CFR 65.5. From 1942 through 1945, 14,000 Japanese-Americans passed through the Heart Mountain Relocation Center. At its peak population of approximately 11,000 (two-thirds of whom were American citizens), Heart Mountain was the state's third largest community. The center was built to house some of the 110,000 persons evacuated from the West Coast following the Japanese attack on Pearl Harbor in December 1941. The Heart Mountain Relocation Center is a reminder of a unique episode in American history and is relevant to the military, social, and political history of the Nation (Heart Mountain Wyoming Foundation 2009; NPS 2009).

6.35.1. Proposed Management Actions for National Historic Landmarks under the Bighorn Basin Proposed RMP

Proactive management under the Proposed RMP would result in beneficial impacts. Measures to preserve the viewshed around the Heart Mountain Relocation Center National Historic Landmark under the Proposed RMP include:

- Do not authorizing undertakings of moderate or strong contrast, except ROWs within the utility corridors.
- Require all undertakings in the viewshed to have a visual contrast rating and visual simulation, as appropriate.
- Avoid or mitigate adverse impacts from all undertakings within the viewshed.
- Prohibit mineral materials disposal within the 72 acres of the National Historic Landmark Urban Center.
- Manage areas within the footprint of the original Heart Mountain Urban Area (833 acres of federal mineral estate) as closed for leasing and apply a CSU stipulation to avoid or mitigate adverse effects within the viewshed toward Heart Mountain.

6.35.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to National Historic Landmarks.

6.35.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for national historic landmarks that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.35.4. Impact Analysis and Effects Determination

In addition to the above management actions, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Threatened and Endangered Species – Management of National Historic Landmarks is not anticipated to impact threatened or endangered species or their habitats. The Heart Mountain Relocation Center is a National Historic Landmark designated in the Bighorn Basin Planning Area. Management of this area may have beneficial effects on threatened and endangered species due to limitations on surface disturbance and management objectives specifically designed to benefit the resources contained within. Implementing National Historic Landmarks management actions *may affect, but is not likely to adversely affect* threatened and endangered species due to *beneficial effects (NLAA-b)*. This determination is based on the expansion of threatened and endangered species habitat protection.

Proposed Species – The Heart Mountain Relocation Center is a National Historic Landmark designated in the Bighorn Basin Planning Area. Management of this area may have beneficial effects on proposed species due to limitations on surface disturbance and management objectives specifically designed to benefit the resources contained within. Management of National Historic Landmarks *is not likely to jeopardize proposed species (NJ)* or their habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. No actions associated with National Historic Landmarks on nonfederal lands are anticipated to affect threatened and endangered species.

6.36. Special Designations – National Historic Trails and Other Historic Trails

The Nez Perce (Neeme-poo or Nimi'ipuu) National Historic Trail (NHT) is the only NHT in the Planning Area. A number of Other Historic Trails also pass through the Planning Area, including trails of importance to Native Americans, routes from the early historic period, such as the Bridger Trail, and roads and highways from the late 19th and early 20th centuries.

NHTs and Other Historic Trails are fragile, nonrenewable resources that provide a direct and tangible link to human history in the Planning Area. As resources on public land under the jurisdiction of a federal agency, the BLM is responsible for their protection and interpretation, and must consider their value when making land use decisions.

For all federal undertakings that may impact NHTs and Other Historic Trails, the BLM complies with NHPA Section 106 before implementing the undertaking. Section 106 compliance typically includes inventory, evaluation, and consultation with the State Historic Preservation Office. As setting has gained importance in determining the NRHP eligibility of extensive trails, trail management must approach the application of viewshed criteria with flexibility, considering the distance from the resource and the type of intrusion when determining the impact. On a case-by-case basis, and as appropriate for some projects, project decisions will consider the importance of viewshed in a resource's eligibility, and the distance necessary to protect its NRHP significance.

6.36.1. Proposed Management Actions for National Historic Trails and Other Historic Trails under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for NHTs and Other Historic Trails that benefit threatened and endangered species:

- Avoid surface-disturbing activities and protect the foreground of NHTs up to three miles or the visual horizon whichever is closer where setting is an important aspect of the integrity of the trail.
- Avoid surface-disturbing activities and protect the foreground of Historic Trails up to two miles or the visual horizon whichever is closer where setting is an important aspect of the integrity for the trail. Use BMPs to avoid or mitigate adverse effects, except within designated utility corridors.
- Motorized vehicle use is limited to existing roads and trails in view within five miles of the Nez Perce NHT, except where other resources considerations impose more restrictive management.

6.36.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to NHTs and Other Historic Trails.

6.36.3. Best Management Practices

Application of the standards specified in BLM trail management guidance, and in the 1986 historic trails plan (BLM 1986d), will limit adverse impacts to trail resources. These standards include:

- Avoid impacts to all physical remains with good integrity.
- Avoid impacts to locales with good environmental integrity.
- Cross the setting where the integrity of setting has already been compromised.
- Restrict the width of a working ROW within a visual buffer on either side of a trail.
- Avoid any blading on a ROW within the buffer zone if a track can do the job.
- Consider special rehabilitation measures (such as revegetation) which will help reestablish the integrity of the trail.

The BLM should use standard measures to reduce the visual impact of proposed actions within trail settings, where setting is a contributing element of eligibility to the NRHP and the setting has integrity. Standard measures should be used as stipulations or conditions of approval attached to authorizations. Standard measures, or BMPs, for reducing the visibility of proposed actions include, but are not limited to the following:

- Apply a CSU stipulation to surface-disturbing activities or surface occupancy.
- Apply Visual Contrast Ratings and, as appropriate, require visual simulations.
- Consolidate project facilities among oil and gas developers; maximize use of existing locations.
- Develop coordinated road and pipeline systems.
- Reduce the amount of surface development by consolidating facilities.

- Use low profile facilities.
- Locate projects to maximize the use of topography and vegetation to screen development.
- Design projects to blend with topographic forms and existing vegetation patterns.
- Use environmental coloration or advance camouflage techniques to reduce the visual impact of facilities that cannot be completely hidden.
- Use broken linear patterns for road developments to screen roads as much as possible. This can include feathering or blending of the edges of linear rights-of-way to soften the dominant line form.
- For livestock control, use electric fencing with low-visibility fiberglass posts and environmental colors.
- Design linear facilities and seismic lines to run parallel to key observation points rather than perpendicular.
- Position facilities to present less of a visual impact (e.g., a facility with several tanks lined up so that one obscures the visibility of the others).

In addition, the Bighorn Basin Proposed RMP identifies BMPs within existing statewide programmatic BAs and BOs as optional, or to be implemented when applicable, for each species analyzed in this BA. A complete list of BMPs from the existing statewide programmatic BAs and BOs is provided in Section 9.0.

6.36.4. Impact Analysis and Effects Determination

In addition to the above management actions and BMPs, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Threatened and Endangered Species – Management of NHTs and Other Historic Trails is not anticipated to impact threatened or endangered species or their habitats. The Nez Perce (Neeme-poo or Nimi'ipuu) NHT is the only NHT in the Planning Area. A number of Other Historic Trails pass through the Planning Area, including trails of importance to Native Americans, routes from the early historic period, such as the Bridger Trail, and roads and highways from the late 19th and early 20th centuries. Management of these areas may have beneficial effects on threatened and endangered species due to limitations on surface disturbance and management objectives specifically designed to benefit the resources contained within; such as limiting surface-disturbing activities and travel management objectives within the trail corridor. Implementing NHTs and Other Historic Trails management actions *may affect, but is not likely to adversely affect* threatened and endangered species due to *beneficial effects (NLAA-b)*. This determination is based on the expansion of threatened and endangered species habitat protection.

Proposed Species – The Nez Perce (Neeme-poo or Nimi'ipuu) NHT is the only NHT in the Planning Area. A number of Other Historic Trails also pass through the Planning Area, including trails of importance to Native Americans, routes from the early historic period, such as the Bridger Trail, and roads and highways from the late 19th and early 20th centuries. Management of these areas may have beneficial effects on proposed species due to limitations on surface disturbance and management objectives specifically designed to benefit the resources contained within. Management of NHTs and Other Historic Trails *is not likely to jeopardize proposed species (NJ)* or their habitats.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. No actions associated with NHTs and Other Historic Trails on nonfederal lands are anticipated to affect threatened and endangered species.

6.37. Special Designations – Wild and Scenic Rivers

The National Wild and Scenic River System (NWSRS) is a series of nationally designated waterways and their immediate environments (the land within the waterway corridors) that have outstanding resource values and are preserved in a free-flowing condition. The system consists of three types of rivers, as follows:

- *Recreation* — Rivers or sections of rivers readily accessible by road or railroad and might have some development along their shorelines and might 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.

There are 14 waterway segments and associated waterway corridors (comprising 27,243 acres) in the Planning Area that have been identified as eligible and draft suitable for inclusion in the NWSRS and are managed with interim management to protect their outstandingly remarkable values and free-flowing characteristics. However, the Bighorn Basin Proposed RMP proposes to manage all eligible and draft suitable waterways as unsuitable for inclusion in the NWSRS, and to release these areas to other uses.

6.37.1. Proposed Management Actions for Wild and Scenic Rivers under the Bighorn Basin Proposed RMP

There are no proposed management actions for wild and scenic rivers (WSRs) under the Bighorn Basin Proposed RMP.

6.37.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to WSRs.

6.37.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for WSRs that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.37.4. Impact Analysis and Effects Determination

The conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – The Proposed RMP does not implement special management prescriptions for WSRs; therefore, *no effect (NE)* is anticipated to the Canada lynx.

Gray Wolf – The Proposed RMP does not implement special management prescriptions for WSRs. All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – The Proposed RMP does not implement special management prescriptions for WSRs; therefore, *no effect (NE)* is anticipated to the grizzly bear.

North American Wolverine – The Proposed RMP does not implement special management prescriptions for WSRs; therefore, this *is not likely to jeopardize (NJ)* the North American wolverine.

Ute Ladies'-tresses – The Proposed RMP does not implement special management prescriptions for WSRs; therefore, *no effect (NE)* is anticipated to the Ute ladies'-tresses.

6.38. Special Designations – Wilderness Study Areas

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, the National Park Service and the USFS managed most land considered for and designated as wilderness. 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. Areas identified under this direction are WSAs. 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 affected primarily by the forces of nature.
- *Opportunities:* Provides outstanding opportunities for solitude or primitive and unconfined types of recreation.

WSAs also often have special qualities such as ecological, geological, educational, historical, scientific, and scenic values. There are no congressionally designated wilderness areas in the Planning Area.

The following WSAs are managed under the Interim Management Policy for Lands under Wilderness Review:

- McCullough Peaks (24,531 acres)
- Alkali Creek (9,475 acres)
- Cedar Mountain (20,425 acres)
- Honeycombs (20,156 acres)
- Medicine Lodge (7,181 acres)
- Trapper Creek (7,475 acres)
- Owl Creek (668 acres)
- Sheep Mountain (23,256 acres)
- Red Butte (10,805 acres)
- Bobcat Draw Badlands (16,969 acres)

6.38.1. Proposed Management Actions for Wilderness Study Areas under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for WSAs that benefit threatened and endangered species:

- Motorized vehicle use is limited to designated roads and trails within the Cedar Mountain and Honeycombs WSAs, which may include the routes inventoried during the initial assessment.
- Motorized vehicle use is limited to designated roads and trails in the Trapper Creek, Medicine Lodge, and Alkali Creek WSAs, which may include the routes inventoried during the initial assessment.
- Carry forward the McCullough Peaks Travel Management Plan, in which motorized vehicle use is limited to designated roads and trails in the McCullough Peaks WSA.
- Carry forward the Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands travel management plans, in which Owl Creek, Sheep Mountain, Red Butte, and Bobcat Draw Badlands WSAs are closed to motorized vehicle use.
- Acquire inholdings and/or lands or interest in lands within WSA boundaries in cooperation with willing landowners. Manage acquired inholdings to preserve their wilderness characteristics.
- Manage WSAs as ROW avoidance/mitigation areas, subject to the Interim Management Plan (BLM 1995).
- Close WSAs to renewable energy development.
- Manage all mineral activities in WSAs as in accordance with the Interim Management Plan.
- Close WSAs to mineral and geothermal leasing.
- Close WSAs to mineral materials disposal.

6.38.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to WSAs.

6.38.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for WSAs that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.38.4. Impact Analysis and Effects Determination

In addition to the above management actions, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Threatened and Endangered Species – Management of WSAs is not anticipated to impact threatened or endangered species or their habitats. The WSA designation is beneficial to the protection of air and watersheds, soil and water quality, ecological stability, plant and animal gene pools, and habitats for

wildlife. Management of these areas may have beneficial effects on threatened and endangered species due to access restrictions, limitations on surface disturbance, and management objectives specifically designed to benefit the resources contained within; such as managing WSAs as ROW avoidance areas, closing WSAs to mineral and geothermal leasing and mineral materials disposal. Implementing WSA management actions *may affect, but is not likely to adversely affect* threatened and endangered species due to *beneficial effects (NLAA-b)*. This determination is based on the continuation of threatened and endangered species habitat protection.

Proposed Species – Management of WSAs *is not likely to jeopardize (NJ)* proposed species or their habitats. The WSA designation is beneficial to the protection of air and watersheds, soil and water quality, ecological stability, plant and animal gene pools, and habitats for wildlife. Management of these areas may have beneficial effects on proposed species due to access restrictions, limitations on surface disturbance, and management objectives specifically designed to benefit the resources contained within.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. No actions associated with WSAs on nonfederal lands are anticipated to affect threatened and endangered species.

6.39. Socioeconomic Resources

Social conditions concern the human communities in the Planning Area, including towns, cities, and rural areas, and the custom, culture, and history of the area as it relates to human settlement, as well as current social values.

Throughout the history of the Planning Area, the use of natural resources on private, state, and federal land has provided the basis for continued social and economic stability in all four counties. Agriculture, mining, mineral development and production, and tourism are directly tied to the ability to use federal and state land. As a result, management decisions for federal (and state) land and natural resources will have a ripple effect throughout the social and economic climate of the Planning Area.

Because people of all ages and all levels of educational attainment, and both men and women, use BLM lands, the variation in these demographic groups is not a driver for BLM's management actions in the Planning Area. However, the demographic data provides a backdrop of the human communities that will be affected by BLM's decisions.

6.39.1. Proposed Management Actions for Socioeconomic Resources under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not propose protections for socioeconomic resources that benefit threatened and endangered species.

6.39.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to socioeconomic resources.

6.39.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for socioeconomic resources that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.39.4. Impact Analysis and Effects Determination

The conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Threatened and Endangered Species – Socioeconomic resources are not anticipated to impact threatened or endangered species or their habitats. The Proposed RMP would result in a slight decrease in job opportunities associated with decreased development of oil and gas resources and, therefore, may result in a slight decrease in population, which may benefit listed species. The Proposed RMP would result in some beneficial impacts to air quality, wildlife, and other resources that improve quality of life related to natural characteristics. Implementing socioeconomic resources will have *no effect (NE)* on threatened and endangered species. This determination is based on the lack of specific action in the Proposed RMP related to socioeconomic resources.

Proposed Species – Socioeconomic resources *is not likely to jeopardize proposed species (NJ)* or their habitats. The Proposed RMP would result in a slight decrease in job opportunities associated with decreased development of oil and gas resources and, therefore, may result in a slight decrease in population, which may benefit listed species. No specific actions for socioeconomic resources are anticipated to impact proposed species.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Housing developments could expand into threatened and endangered species habitats. Housing developments could remove, degrade, or fragment habitats for these species. Development into prairie dog habitats could remove habitat or introduce distemper through domestic dogs.

6.40. Health and Safety

The BLM's Hazard Management and Resource Restoration Program (HMRRP) address a variety of hazards on public surface to reduce risks to visitors and employees. Hazards may include hazardous materials; mine shafts and adits; abandoned equipment and structures; explosives and munitions; and spills from pipelines, tankers, and storage tanks.

Activities directed toward health and safety concerns in the Bighorn Basin Planning Area are primarily associated with AMLs, natural geologic hazards, and hazardous wastes and materials. Natural geologic hazards include landslides and earthquakes. A wide range of permitted uses that occur on BLM-administered public lands have the potential to introduce hazardous substances and petroleum products into the environment.

Approximately 380 potential AML sites have been identified in the Planning Area based on site data from a Wyoming DEQ AML Division database; more than 30 of those sites were visited and found to have no trace of past mining activity (Wyoming DEQ AMLD 2008).

There have been 31 response actions on public lands in the Planning Area since 1993 – 8 incidents involving the illegal disposal of unknown substances, 2 incidents of wire burns, 5 incidents involving abandoned facilities with the potential for the release of hazardous substances, 1 polychlorinated biphenyl spill, 2 incidents involving the discovery of explosives, and 3 incidents involving potential unexploded seismic charges.

There are several naturally occurring geologic hazards in the Planning Area. These include primarily down-slope movements such as slumps, landslides and rock-fall, and flood-related hazards, shrinking and swelling clays, and potentially seismic zones.

6.40.1. Proposed Management Actions for Health and Safety under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP proposes the following protections for health and safety that benefit threatened and endangered species:

- Manage hazardous substances to reduce human and environmental risk, restore contaminated lands, and carry out emergency response activities.
- Prepare Environmental Site Assessments on lands acquired or conveyed.
- Manage hazardous materials, including but not limited to hazardous substances, hazardous wastes, and hazardous materials, to reduce the risk to visitors, employees, and the environment, to restore contaminated lands, and to carry out emergency response activities, as per appropriate laws, policies, and regulations.
- Consistent with Wyoming DEQ and United States Environmental Protection Agency requirements, require Hazardous Spill Response Plans for all projects involving hazardous materials. Report spills and releases of chemicals, petroleum products, and produced water to Wyoming DEQ in accordance with Wyoming law.

6.40.2. BLM-Committed Conservation Measures

The Bighorn Basin Proposed RMP would implement, where appropriate, conservation measures within existing statewide programmatic BOs and BAs (Section 9.0). None of the proposed conservation measures for the threatened and endangered species analyzed in this BA specifically apply to health and safety.

6.40.3. Best Management Practices

The Bighorn Basin Proposed RMP does not propose any specific BMPs for health and safety that benefit threatened and endangered species. However, BMPs within existing statewide programmatic BAs and BOs are considered optional and/or would be implemented when applicable. Refer to Section 9.0 for species-specific BMPs.

6.40.4. Impact Analysis and Effects Determination

In addition to the above management actions, the conservation measures identified in Section 9.0 were taken into consideration for the impact analysis and effects determinations.

Canada Lynx – Actions related to health and safety will result in no impacts to lynx behavior, denning habitat, or foraging habitat. The actions associated with health and safety management are relatively small in scope, of short duration, and unlikely to occur in lynx habitat. Implementation of health and safety management actions *may affect, but is not likely to adversely affect* the Canada lynx due to *insignificant effects (NLAA-i)*. This determination is based on the lack of overlap of management activities and Canada lynx habitat.

Gray Wolf – All of the BLM programs evaluated in this document present *no jeopardy (NJ)* to the gray wolf because this is a non-essential, experimental population and by definition, any effects to this population will not jeopardize the continued existence of the species.

Grizzly Bear – Actions related to health and safety will result in no impacts to grizzly bear behavior, denning habitat, or foraging habitat. The actions associated with health and safety management are relatively small in scope, of short duration, and unlikely to occur in grizzly bear habitat. The construction and maintenance of signs and fencing could conceivably cause indirect impacts to grizzly bears if they were present during the action, but these actions are relatively small in scope, and of short duration. In addition, restrictions on the timing of activities and spatial considerations for grizzly bears, or other parameters, would be implemented to avoid or prevent significant disruption of normal or expected bear behavior and activity. Implementation of health and safety management actions *may affect, but is not likely to adversely affect* the grizzly bear due to *insignificant effects (NLAA-i)*. This determination is based on the lack of impacts due to management actions that are relatively small in scope and of short duration occurring in grizzly bear habitat.

North American Wolverine – Actions related to health and safety will result in no impacts to wolverine behavior, denning habitat, or foraging habitat. The actions associated with health and safety management are relatively small in scope, of short duration, and unlikely to occur in wolverine habitat. Implementation of health and safety management actions *is not likely to jeopardize (NJ)* the North American wolverine. This determination is based on the lack of overlap of management activities and wolverine habitat.

Ute Ladies'-tresses – Where needed, warning signs and protective fencing would be erected in AMC sites. Typically signage and fencing for health and safety do not take place in riparian habitat, but the construction and maintenance of signs and fencing could conceivably cause disturbance to potential Ute ladies'-tresses habitat. However, these effects will be localized. Implementing health and safety management actions *may affect, not likely to adversely affect the* Ute ladies'-tresses due to *discountable effects (NLAA-d)* to the Ute ladies'-tresses.

Cumulative Effects – Cumulative effects include future state, tribal, local, or private actions reasonably certain to occur in the Planning Area. Disposal or an accidental spill of hazardous materials on nonfederal land could be detrimental to threatened or endangered species if the disposal or spill occurred in or adjacent to their habitats.

This page intentionally left blank.

7.0 SUMMARY OF CUMULATIVE EFFECTS

Cumulative effects are the collective incremental impacts of the Proposed RMP regardless of the entity undertaking the action. Cumulative effects include future state, tribal, local, or private actions that are reasonably certain to occur in the Planning Area. There are 40 reasonable foreseeable future projects and actions in or adjacent to the Bighorn Basin Planning Area. The breakdown of the 40 projects by agency includes three Bureau of Land Management (BLM) Resource Management Plans (RMPs), 1 BLM Programmatic Wind Energy Environmental Impact Statement (EIS), 1 BLM Programmatic Energy Distribution Corridor EIS, 1 BLM Programmatic Geothermal Leasing EIS, 4 County Land Use Plans, 7 Conservation District Plans, 6 Watershed Plans, 1 Wyoming Department of Agriculture Strategic Plan, 3 Wyoming Game and Fish Department Plans, 1 Wyoming State Water Plan for the Wind/Bighorn River Basin, 2 Wyoming Statewide Outdoor Recreation and Trail Plans, 1 Wyoming State Historic Preservation Office Statewide Plan, 1 United States Fish and Wildlife Service Plan, 2 National Park Service General Management Plans, 1 Wyoming State Plan, 3 county Fire Management Plans, 1 National Park Service Fire Management Plan for Yellowstone National Park, and 1 National Fire Plan. Future federal actions that are unrelated to the Proposed Plan are not considered because they require separate consultation pursuant to section 7 of the Endangered Species Act.

Surface-disturbing and other disruptive activities that occur on non BLM-administered lands are not subject to the restrictions designed to protect wildlife habitat on BLM-administered lands and therefore may increase the cumulative impacts on wildlife habitat. Nonfederal actions that may affect threatened and endangered species or their habitats in the Planning Area include:

- Increased residential development may contribute to a reduction of suitable habitat for threatened and endangered species, through degradation, removal, and fragmentation of habitat, including additional sediment loading of waterways.
- An expanded network of roads on state and private lands will impact threatened and endangered species habitat through the fragmentation or direct loss of habitats.
- Fragmentation, loss, or degradation of threatened and endangered species habitat due to the infrastructure associated with urban expansion and mineral development including pipelines and powerlines.
- Spread of invasive species on state and private lands throughout the Planning Area.
- Actions by private landowners that impact the health of wetland/riparian areas and their performance of critical water quality protection functions.
- Surface-disturbing activities caused by mineral and other development, the construction and maintenance of rights-of-way, and vegetation treatments (e.g., prescribed burns and mechanical fuels treatments) on state and private lands contribute to short- or long-term losses of vegetation and increased sedimentation.
- Surface disturbance associated with oil and gas development including permanent facilities such as roads and well pads.
- Surface disturbance associated with locatable mineral development that may remove habitat for threatened and endangered species.

This page intentionally left blank.

8.0 SUMMARY OF EFFECTS DETERMINATIONS

Table 3 summarizes the effects determinations for threatened and endangered species in the Bighorn Basin Planning Area.

Table 3. Summary of Effects Determinations for Threatened, Endangered, and Proposed Species in the Bighorn Basin Planning Area

Resource or Resource Use	Species					
	Black-footed Ferret	Canada Lynx	Grizzly Bear	Gray Wolf	North American Wolverine	Ute Ladies'-tresses
Air Quality	NE	NE	NLAA-d	NJ	NJ	NE
Soil	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Water	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Cave and Karst Resources	NE	NLAA-d	NLAA-d	NJ	NJ	NE
Locatable Minerals	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Leasable Minerals – Coal	NE	NE	NE	NJ	NJ	NE
Leasable Minerals – Oil Shale	NE	NE	NE	NJ	NJ	NE
Leasable Minerals – Geothermal	NE	NE	NE	NJ	NJ	NE
Leasable Minerals – Oil and Gas	NE	NLAA-i	NLAA-d	NJ	NJ	NLAA-d
Leasable Minerals – Other Solid Leasables	NE	NE	NE	NJ	NJ	NE
Salable	NE	NLAA-i	NLAA-d	NJ	NJ	NLAA-d
Fire and Fuels Management (Wildfire)	NE	NLAA-i	NLAA-i	NJ	NJ	NLAA-d
Fire and Fuels Management (Prescribed Fire)	NE	NLAA-i	NLAA-i	NJ	NJ	NLAA-d
Fire and Fuels Management (Stabilization and Rehabilitation)	NE	NLAA-i	NLAA-i	NJ	NJ	NLAA-d
Forests, Woodlands, and Forest Products	NE	NLAA-i	NLAA-i	NJ	NJ	NE
Grassland and Shrubland Communities	NE	NLAA-d	NLAA-d	NJ	NJ	NE
Riparian/Wetland Resources	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Invasive Species and Pest Management	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Fish and Wildlife Resources	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Special Status Species (Plants)	NE	NE	NE	NJ	NJ	NLAA-b
Special Status Species (Fish and Wildlife)	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-i
Wild Horses	NE	NE	NLAA-d	NJ	NJ	NE
Cultural Resources	NE	NLAA-d	NLAA-i	NJ	NJ	NLAA-d
Paleontological Resources	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Visual Resource Management	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Lands and Realty	NE	NLAA-i	NLAA-i	NJ	NJ	NE
Renewable Energy	NE	NLAA-d	NLAA-d	NJ	NJ	NLAA-d
Rights-of-Way and Corridors	NE	NLAA-i	NLAA-i	NJ	NJ	NLAA-d

Table 3. Summary of Effects Determinations for Threatened, Endangered, and Proposed Species in the Bighorn Basin Planning Area

Resource or Resource Use	Species					
	Black-footed Ferret	Canada Lynx	Grizzly Bear	Gray Wolf	North American Wolverine	Ute Ladies'-tresses
Comprehensive Travel and Transportation Management	NE	NLAA-i	NLAA-i	NJ	NJ	NLAA-d
Recreation	NE	NLAA-i	NLAA-d	NJ	NJ	NLAA-d
Lands with Wilderness Characteristics	NE	NE	NE	NJ	NJ	NE
Livestock Grazing Management	NE	NLAA-d	LAA	NJ	NJ	LAA
Special Designations (ACECs)	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Special Designations (National Back Country Byways)	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Special Designations (National Historic Landmarks)	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Special Designations (National Historic Trails and Other Trails)	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Special Designations (Wild and Scenic Rivers)	NE	NE	NE	NJ	NJ	NE
Special Designations (Wilderness Study Areas)	NE	NLAA-b	NLAA-b	NJ	NJ	NLAA-b
Socioeconomic	NE	NE	NE	NJ	NJ	NE
Health and Safety	NE	NLAA-i	NLAA-i	NJ	NJ	NLAA-d

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
ESA	Endangered Species Act
NE	No effect
NLAA-b-i-d	May affect, but is not likely to adversely affect, due to beneficial, insignificant, or discountable effects
LAA	May affect, is likely to adversely affect
NJ	Is not likely to jeopardize proposed species
LJ	Is likely to jeopardize proposed species
NI	No impact
MI	May impact, but not likely to contribute to the need for federal listing

9.0 SUMMARY OF SPECIES-SPECIFIC COORDINATION AND CONSERVATION MEASURES

Implementing the following species-specific conservation measures is intended to minimize adverse effects that are likely to result from implementing the management actions identified for the Resource Management Plan (RMP). Specific to each species, this section describes (1) proposed protections in the Bighorn Basin Proposed RMP, (2) conservation measures committed to by the Bureau of Land Management (BLM) as identified in the statewide programmatic biological assessments (BAs), and (3) best management practices (BMPs) as identified in the statewide programmatic BAs, BOs and other sources, as specified below. The BLM will also consider implementing any appropriate BMPs to further protect the species and its habitat. In the event new populations of the species are discovered, these measures will apply until such time that further investigation and subsequent consultation with the United States Fish and Wildlife Service (USFWS) result in more appropriate management prescriptions.

9.1. Black-footed Ferret Conservation Measures

9.1.1. Proposed Protections in the Bighorn Basin Proposed RMP

The following protections are proposed for black-footed ferrets:

- Control surface-disturbing activities to avoid or mitigate adverse effects on about 1,300 BLM-administered surface acres of active prairie dog colonies within the Meeteetse complex. This requirement will remain in effect until completion of a site-specific activity plan being prepared to manage ferrets in this area. The restriction will then be reassessed for its continued appropriateness. This restriction applies to such things as mineral leasing, geophysical exploration (except casual use), and construction activities.
- If the USFWS and Wyoming Game and Fish Department (WGFD) determine that large prairie dog colonies and/or complexes in the Planning Area are suitable for black-footed ferret reintroduction, apply a no surface occupancy (NSO) restriction on these areas.

9.1.2. Conservation Measures Committed to by the BLM

Conservation measures for this species as identified in the BLM statewide programmatic BA (BLM 2005a) and the Biological Opinion (USFWS 2006a) for the BLM's statewide programmatic BA include the following:

- When project proposals are received for areas that still require black-footed ferret surveys [i.e., non-block-cleared (see Map 3 of the black-footed ferret biological assessment (BLM 2005)) or the U.S. Fish and Wildlife Service's block clearance letter of February, 2004) (USFWS 2004)] and meet potential habitat criteria as defined by USFWS' guidelines (USFWS 1989), the BLM shall initiate coordination with the USFWS at the earliest possible date so that the USFWS can provide input. This should minimize the need to redesign projects at a later date to include black-footed ferret conservation measures, determined as appropriate by the USFWS (Black-footed ferret surveys are no longer applicable [USFWS 2013]).
- In areas identified in conservation measure number one above (non-block-cleared areas), if suitable prairie dog town/complex avoidance is not possible, surveys of towns/complexes for black-footed ferrets shall be performed in accordance with current USFWS guidelines and

recommendations. This information shall be provided to the BLM and the USFWS in accordance with section 7 of the Endangered Species Act (ESA), as amended (50 Code of Federal Regulations [CFR] 402.10 and 13), and the Interagency Cooperation Regulations (Black-footed ferret surveys are no longer applicable [USFWS 2013]).

- Observations of black-footed ferrets, their sign, or carcasses on a project area and the location of the suspected observation, however obtained, shall be reported within 24 hours to the appropriate local BLM wildlife biologist and Field Supervisor of the USFWS office in Cheyenne, Wyoming, (307) 772-2374. Observations will include a description including what was seen, time, date, exact location, suspected cause of death, and observer's name and telephone number. Carcasses or other "suspected" ferret remains shall be collected by the USFWS or BLM employees and deposited with the USFWS Wyoming Field Office or the USFWS law enforcement office. While BLM employees would not likely have a permit to "collect" a black-footed ferret carcass, it is imperative that a carcass be salvaged and immediately transported to the USFWS so that the carcass would not be scavenged and as much pertinent information concerning the cause of death be gathered, including photographs, so that an accurate depiction of the fatality would be documented.
- Discovery of a live black-footed ferret outside of the Experiment Non-essential population areas in Wyoming would have profound importance to the species' recovery. Reporting of such a discovery by staff, contractors, permittees, etc., will be fully encouraged by BLM staff and management.
- If black-footed ferrets or their sign are found on public lands outside of the Non-essential Experimental population areas in Wyoming, all previously authorized surface-disturbing activities (or actions on any future application that may directly, indirectly, or cumulatively affect the colony/complex ongoing) in the complex in which black-footed ferrets are found shall temporarily cease until further direction is developed by a task force consisting of the BLM Field Office Manager, the USFWS Field Office Supervisor, the WGFD Non-game Coordinator, and other potentially affected parties. This task force will be formed within 48 hours of the find to determine appropriate conservation/ protection actions. The BLM shall coordinate with these affected parties to ensure that ferret surveys or appropriate actions are performed as deemed necessary. The BLM will also re-initiate section 7 consultation with the USFWS. An emergency road closure limiting access to the site will be enacted by the BLM within 48 hours of the find to protect the newly discovered black-footed ferrets. This emergency road closure will be for all non-paved roads within at least one mile of the find. On a case-by-case basis and with approval of the USFWS, certain surface-disturbing activities in the town or complex may be allowed to continue.
- Information on ferret identification shall be provided and posted in common areas and circulated in a memorandum among all employees and service providers. This information shall illustrate the black-footed ferret and its sign; describe morphology, tracks, scat, skull, habitat characteristics, behavior, and current status; and the relationship between project development and possible impacts to black-footed ferrets, especially regarding canine distemper and recreational shooting.
- New prairie dog towns shall be allowed to become established on public lands in all circumstances where they would not interfere with other previously established activities. All white-tailed prairie dog towns/complexes greater than 200 acres in size and black-tailed prairie dog towns/complexes greater than 80 acres shall be assessed and mapped for any projects that are proposed within such areas, and associated burrow densities on potentially affected towns

shall be determined, when necessary, pursuant to USFWS and BLM approved techniques to determine whether the criteria established for ferret occupancy in the USFWS guidelines for black-footed ferrets are met.

- The BLM shall work with the USFWS and the WGFD to identify and select Special Management Areas (SMAs) for potential reintroduction sites for black-footed ferrets. These areas will be selected based on a number of factors, including the BLM's ability to protect and manage them, their size (5,000- to 10,000-acre sites, optimally), and potential utility to black-footed ferrets. Because of the need to manage reintroduction sites (of prairie dog complexes) on a landscape scale, and because plague is a significant but unpredictable event, SMAs may be selected that are currently "plagued out," but may recover in time. Complexes can be selected from, but not necessarily restricted to, those shown in block cleared areas (see Map 3 of BLM 2005). Protective measures will be drawn up for these SMAs, and may include being withdrawn from leasing and protected from commercial development (i.e., land disposal through Recreation and Public Purposes actions, etc.). Examples of protective measures that will be included in these SMAs are:
    - The BLM shall work with respective State Game and Fish agencies and USFWS offices to ensure that enough reintroduction sites are maintained to successfully recover the black-footed ferret. If areas available for reintroduction are removed through BLM'-authorized actions below a threshold level, so that the black-footed ferret can no longer be recovered, then those actions reducing availability of reintroduction sites will be modified or discontinued until the black-footed ferret has been recovered.
    - The BLM shall monitor and post restrictions, if necessary, on recreational opportunities and other uses on BLM-administered lands within one mile of formally proposed and active reintroduction sites for black-footed ferrets.
    - The BLM and operators shall conduct educational outreach to employees regarding the nature, hosts, and symptoms of canine distemper and its effects on black-footed ferrets, focusing attention on why employees should not have pets on worksites during or after hours. The BLM shall encourage operators to develop policies to prohibit dogs from operation sites or require current distemper vaccinations within black-footed ferret reintroduction areas. It is recommended that vaccinated puppies shall not be allowed until one month after their final distemper vaccination due to potential effects of the modified live virus vaccine.

9.1.3. Best Management Practices

BMPs for this species as identified in the BLM statewide programmatic BA (BLM 2005a) and the Biological Opinion (USFWS 2006a) for the BLM's statewide programmatic BA include the following:

- Develop prairie dog management plans with ongoing monitoring and protection of prairie dog towns and complexes on towns with high priority for black-footed ferret reintroductions.
- Follow the guidelines outlined in the Wyoming Black-tailed Prairie Dog Management Plan and the White-tailed Prairie Dog Conservation Assessment (Seglund et al. 2004).
- Establish land stewardship agreements with other agencies and/or private landowners where large (1,000 acres) prairie dog towns or complexes exist. These agreements should manage potential uses that may be detrimental to prairie dogs and their habitats, while preserving the landowner's intent for use.

- Avoid sale or exchange of lands with potential for black-footed ferret reintroductions and attempt to acquire parcels with suitable prairie dog complexes on them, especially those parcels that could potentially be part of a black-footed ferret reintroduction effort.
- Initiate, to the extent feasible, land exchanges in the Thunder Basin and Shirley Basin in areas with potential for black-footed ferrets, in order to increase the land area in federal ownership.
- Avoid vegetation stand conversions that have been shown to be detrimental to prairie dogs, and reduce or eliminate any other suspected ecosystem-degrading practices.
- Encourage, support, and/or establish a prairie dog research program, addressing issues such as the effect of recreational shooting and oil and gas development on prairie dogs, sylvatic plague control, and population viability analysis.
- Because knowledge of the effects of resource extraction on white-tailed prairie dog populations is limited, monitoring at sites before, during, and after energy development is recommended.

9.2. Canada Lynx Conservation Measures

9.2.1. Proposed Protections under the Bighorn Basin Proposed RMP

The following protection is proposed for Canada lynx:

- Canada lynx analysis units (LAUs) are closed to over-snow travel.

9.2.2. Conservation Measures Committed to by the BLM

Conservation measures for this species as identified in the BLM statewide programmatic BA (BLM-2005b) and the Biological Opinion (USFWS 2005a) for the BLM's statewide programmatic BA include the following:

All Programs

- Within an LAU, the BLM shall ensure that mapping occurs of lynx habitat and non-habitat, and that denning habitat, foraging habitat, and topographic features important for lynx movement are mapped. The BLM or project proponent shall identify whether all lynx habitat within an LAU is in suitable or unsuitable condition. This will involve interagency coordination where LAUs cross administrative boundaries.
- The BLM shall limit disturbance in each LAU to 30 percent of the suitable lynx habitat within the LAU. If 30 percent of the habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of management activities. The BLM shall map oil and gas production and transmission facilities, mining activities and facilities, dams, timber harvest, and agricultural lands on public lands and evaluate projects on adjacent private lands to assess cumulative effects. This will involve interagency coordination where LAUs cross administrative boundaries, primarily with the United States Forest Service.
- BLM management actions shall not change more than 15 percent of lynx habitat within an LAU to an unsuitable condition within a 10-year period. This will involve interagency coordination where LAUs cross administrative boundaries.
- The BLM shall maintain denning habitat in patches generally larger than 5 acres, comprising at least 10 percent of lynx habitat. Where less than 10 percent is currently present in an LAU,

defer any management actions that would delay development of denning habitat structure. This will involve interagency coordination where LAUs cross administrative boundaries.

- The BLM shall ensure that key linkage areas that may be important in providing landscape connectivity within and between geographic areas across all ownerships are identified, using best available science.
- The BLM shall ensure that habitat connectivity within and between LAUs is maintained.
- The BLM shall document lynx observations (tracks, sightings, along with date, location, and habitat) and provide these to the Wyoming Natural Diversity Database (WYNDD); and request an annual update from them on all sightings for review in each field office.

Forest Management

- Following a disturbance (blowdown, fire, insects) that could contribute to lynx denning habitat, the BLM shall allow no salvage harvest when the affected area is smaller than 5 acres. Some exceptions apply, as specified in the Lynx Conservation Assessment Strategy timber management project planning standards.
- The BLM shall only allow pre-commercial thinning when stands no longer provide snowshoe hare habitat.
- In aspen stands, the BLM shall ensure that harvest prescriptions apply that favor regeneration of aspen.
- The BLM shall ensure that improvement harvests (commercial thinning, selection, etc.) are designed to retain and improve recruitment of an understory of small diameter conifers and shrubs preferred by hares.

Fire Management

- In the event of a large wildfire, the BLM shall ensure that a post-disturbance assessment prior to salvage harvest is conducted, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
- The BLM shall ensure that construction of temporary roads and fire lines are minimized to the extent possible during fire suppression activities and shall ensure revegetation of those that are necessary. Construction on ridges and saddles should be avoided if possible.

Recreation

- The BLM shall allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas in LAUs unless the designation serves to consolidate unregulated use and improves lynx habitat through a net reduction of compacted snow areas. This is intended to apply to dispersed recreation, rather than existing ski areas. Winter logging activity is not subject to this restriction.
- In lynx habitat within an LAU, the BLM shall ensure that federal actions do not degrade or compromise landscape connectivity or linkage areas when planning and operating new or expanded recreation developments.
- The BLM shall ensure that trails, roads, and lift termini are designed to direct winter use away from diurnal security habitat.
- To protect the integrity of lynx habitat, the BLM shall ensure that (as new information becomes available) winter recreational special use permits (outside of permitted ski areas) that promote snow compacting activities in lynx habitat are evaluated and amended as needed.

Livestock Grazing

- The BLM shall ensure that livestock use in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components is not allowed. This regeneration may take three years or longer and will depend on site-specific conditions.
- The BLM shall ensure that grazing in aspen stands is managed to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones.
- Within lynx habitat, the BLM shall ensure that livestock grazing in riparian areas and willow patches is managed to maintain or achieve mid seral or higher condition to provide cover and forage for prey species.
- On projects where over-snow access is required, the BLM shall ensure use is restricted to designated routes.
- Predator control activities, including trapping or poisoning on domestic livestock allotments on federal lands within lynx habitat, shall be conducted by USFWS Wildlife Services personnel in accordance with USFWS recommendations established through a formal section 7 consultation process.
- The BLM shall ensure that the potential importance of shrub-steppe habitats in the lynx habitat matrix and in providing landscape connectivity between blocks of lynx habitat is evaluated and considered as integral to overall lynx habitat where appropriate. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.
- In high-elevation riparian areas, especially those subject to grazing, the BLM shall ensure that weed assessments and weed control are conducted to optimize habitat for snowshoe hares.

Access

- Within lynx habitat, the BLM shall ensure that key linkage areas and potential highway crossing areas are identified, using best available science.
- The BLM shall work cooperatively and proactively with the Federal Highway Administration and State Departments of Transportation to identify land corridors necessary to maintain connectivity of lynx habitat and map the location of “key linkage areas” where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx (and other wildlife).
- Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared right-of-way (ROW), or would foreseeably contribute to development or increases in human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.

Lands Management

- The BLM shall ensure that proposed land exchanges, land sales, and special use permits are evaluated for effects on key linkage areas.

Energy Development

- If activities are proposed in lynx habitat, the BLM shall ensure that stipulations and conditions of approval (COAs) for limitations on the timing of activities and surface use and occupancy are developed at the leasing and Notice of Staking/Application for Permit to Drill (APD) stages. For example, requiring that activities not be conducted at night, when lynx are active; and avoiding activity near denning habitat during the breeding season (April or May to July) to protect vulnerable kittens.
- The BLM shall ensure that snow compaction is minimized when authorizing and monitoring developments. The BLM shall encourage remote monitoring of sites that in lynx habitat so that they do not have to be visited daily.

9.2.3. Best Management Practices

BMPs for this species as identified in the BLM statewide programmatic BA (BLM 2005b) and the Biological Opinion (USFWS 2005a) for the BLM's statewide programmatic BA include the following:

- Design regeneration prescriptions to mimic historical fire (or other natural disturbance) events, including retention of fire-killed dead trees and coarse woody debris.
- Design harvest units to mimic the pattern and scale of natural disturbances and retain natural connectivity across the landscape. Evaluate the potential of riparian zones, ridges, and saddles to provide connectivity.
- Provide for continuing availability of foraging habitat in proximity to denning habitat.
- In areas where recruitment of additional denning habitat is desired, or to extend the production of snowshoe hare foraging habitat where forage quality and quantity is declining due to plant succession, consider improvement harvests (commercial thinning, selection, etc.). Improvement harvests should be designed to retain and recruit the understory of small-diameter conifers and shrubs preferred by hares; retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and maintain or improve the juxtaposition of denning and foraging habitat.
- Provide habitat conditions through time that support dense horizontal understory cover, and high densities of snowshoe hares. This includes, for example, mature multi-storied conifer vegetation. Focus vegetation management, including timber harvest and use of prescribed fire, in areas that have potential to improve snowshoe hare habitat (dense horizontal cover) but that presently have poorly developed understories that have little value to snowshoe hares.
- Design burn prescriptions to promote response by shrub and tree species that are favored by snowshoe hare and thus regenerate or create snowshoe hare habitat (e.g., regeneration of aspen and lodgepole pine).
- Design burn prescriptions to retain or encourage tree species composition and structure that will provide habitat for red squirrels or other alternate prey species.
- Consider the need for pre-treatment of fuels before conducting management ignitions.
- Design burn prescriptions and, where feasible, conduct fire suppression actions in a manner that maximizes lynx denning habitat.
- Map and monitor the location and intensity of snow-compacting activities (e.g., snowmobiling, snowshoeing, cross-country skiing, dog sledding, etc.) that coincide with lynx habitat, to facilitate future evaluation of effects on lynx as information becomes available. Discourage

recreational use in areas where it is shown to compromise lynx habitat. Such actions should be undertaken on a priority basis considering habitat function and importance.

- Provide a landscape with interconnected blocks of foraging habitat where snowmobile, cross-country skiing, snowshoeing, or other snow-compacting activities are minimized or discouraged.
- Identify and protect potential security habitats in and around proposed developments or expansions.
- Determine where high total road densities (more than 2 miles per square mile) coincide with lynx habitat and prioritize roads for seasonal restrictions or reclamation in those areas.
- Minimize roadside brushing in order to provide snowshoe hare habitat.
- Limit public use on temporary roads constructed for timber sales. Design new roads, especially the entrance, for effective closure upon completion of sale activities.
- Limit public use on temporary and permanent roads constructed for access to timber sales, mines, and leases. Design new roads, especially the entrance, for effective closure. Upon project completion, reclaim or obliterate these roads.
- Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.
- To reduce mistaken shooting of lynx, initiate and/or augment interagency information and education efforts throughout the range of lynx in the contiguous states. Utilize trailhead posters, magazine articles, news releases, state hunting and trapping regulation booklets, etc., to inform the public of the possible presence of lynx, field identification, and their status.
- Where needed, develop measures such as wildlife fencing and associated underpasses or overpasses to reduce mortality risk.
- Where feasible within identified key linkage areas, maintain or enhance native plant communities and patterns, and habitat for potential lynx prey. Pursue opportunities for cooperative management with other landowners. Evaluate whether land ownership and management practices are compatible with maintaining lynx highway crossings in key linkage areas. On public lands, management practices will be compatible with providing habitat connectivity. On private lands, agencies will strive to work with landowners to develop conservation easements, exchanges, or other solutions.
- Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared ROW, or would foreseeably contribute to development or increases in human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.
- In land adjustment programs, identify key linkage areas. Work toward unified management direction via habitat conservation plans, conservation easements or agreements, and land acquisition.
- Plan recreational development, and manage recreational and operational uses to provide for lynx movement and to maintain effectiveness of lynx habitat.
- Identify, map, and prioritize site-specific locations, using topographic and vegetation features, to determine where highway crossings are needed to reduce highway impacts to lynx.

- Using best available science, develop a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project.
- When opportunities for vegetation treatments come up, develop treatments that provide or develop characteristics suitable for snowshoe hare.
- Protect existing snowshoe hare and red squirrel habitat.

9.3. Gray Wolf Conservation Measures

9.3.1. Proposed Protections under the Bighorn Basin Proposed RMP

The Proposed RMP does not identify specific protection measures for the gray wolf.

9.3.2. Conservation Measures Committed to by the BLM

Conservation measures for this species as identified in the BLM statewide programmatic BA (BLM 2004a) and the Biological Opinion (USFWS 2005b) for the BLM's statewide programmatic BA include the following:

- No project actions to be located within 100 meters (330 feet) of den sites between April 1 and June 30. Areas within 0.8 kilometer (½ mile) of a den site are recommended for protection from disturbance.
- Take action to help reduce human-caused mortality wherever possible. For example, provide educational material, as appropriate, to avoid the inadvertent killing of a wolf mistaken for a coyote; provide information on compatible grazing practices (see next bullet); avoid situations that lead to the adoption of human foods and garbage by wolves, which could lead to a bite and subsequent elimination of the wolf.
- Disseminate information useful to livestock producers on wolf/livestock interactions, alternate livestock practices that minimize conflicts between wolves and livestock (e.g., dispersed grazing rather than concentrated grazing), and compatible lambing and calving methods that reduce or eliminate wolf depredation in occupied habitat.
- Designate a state representative to attend the annual interagency coordination meeting.
- Continue to attend the annual coordination meetings with the WGFD.

9.3.3. Best Management Practices

BMPs for this species as identified in the BLM statewide programmatic BA (BLM 2004a) and the Biological Opinion (USFWS 2005a) for the BLM's statewide programmatic BA include the following:

- Avoid an increase in miles of road in elk crucial winter range.
- Avoid situations that allow for wolves to habituate to humans, or become exposed to and use human refuse as a food resource.
- Foster public outreach/education programs to provide information on wolves in schools, campgrounds, and other places. Topics can include but are not limited to: How to be safe around wolves, wolf ecology, wolf mortality factors, and livestock grazing practices harmful to wolves.

- Continue to support the research and documentation of wolf/livestock interactions and livestock grazing practices to improve these practices so that they are more compatible with wolves.
- Continue to provide and improve wolf habitat by monitoring elk populations and improving habitat for elk.
- Encourage reporting of wolf observations by BLM staff and the public to the WGFD.

9.4. Grizzly Bear Conservation Measures

9.4.1. Proposed Protections under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not identify specific protection measures for the grizzly bear.

9.4.2. Conservation Measures Committed to by the BLM

Conservation measures for this species as identified in the BLM statewide programmatic BA (BLM 2006) and the Biological Opinion (USFWS 2006b) for the BLM's statewide programmatic BA include the following:

- The BLM shall ensure that authorized activities planned to occur in currently occupied grizzly bear habitat shall be analyzed and planned with active grizzly bear protection measures. Restrictions on timing of activity and spatial considerations for grizzly bears, or other parameters, will be implemented to avoid or prevent significant disruptions of normal or expected bear behavior and activity in the area.
- The BLM shall provide a packet of educational materials to authorized permittees in grizzly habitat, including, but not limited to, special recreation permittees, livestock permittees, and timber operators.
- In occupied grizzly bear habitat, and in areas of bear conflicts, the BLM shall install bear-resistant refuse containers in developed campgrounds and picnic areas where refuse containers are provided and maintained. In areas receiving dispersed recreational use, the BLM shall inform the public of proper storage techniques for food and refuse.
- The BLM shall ensure that operation plans and special use permits in occupied grizzly bear habitat will specify food storage and handling and garbage disposal standards. All temporary living facilities under temporary use permits in occupied grizzly bear habitat will be required to practice proper food storage and keep all potential attractants stored so they are unavailable to bears. Edibles and/or garbage will be secured from access by grizzly bears. Bear proof refuse containers, and timely refuse collection to prevent overflow, shall be required.
- Important grizzly bear food resources that may occur on BLM-administered land, particularly whitebark pine, army cutworm moths, ungulates (primarily elk calving grounds), and spawning cutthroat trout, shall be noted and monitored. Other important foods may be added to those listed above as our understanding of grizzly bear food resources on BLM-administered land grows. Monitoring protocols for these food resources can be adapted from Appendix E of the Conservation Strategy (ICST 2003) (http://www.fs.fed.us/r 1 /wildlifeligbc/ConservationStrategy /C Sappendices.pdf).

- The BLM shall continue to attend, and be a member of, the Yellowstone Ecosystem Subcommittee of the Interagency Grizzly Bear Committee (IGBC). After delisting, the BLM shall continue to attend the appropriate coordination group(s) including the Yellowstone Grizzly Coordinating Committee.
- The BLM shall not approve commercial cutting or other removal of whitebark pine in the six FOs analyzed in this document in occupied or potential grizzly bear habitat.
- The BLM shall implement strategies to reduce human-bear and domestic livestock-bear conflicts by conducting an evaluation of the causes of such conflicts when they do occur and determining what can be done to avoid or reduce such conflicts in the future. Currently these conflicts are discussed at the NW Wyoming Level 1 meetings (for streamlining ESA Section 7 consultations) that are held two to three times per year.
- All permit holders that conduct activities on public lands in occupied grizzly bear habitat that could result in livestock carcasses being left in locations where bears might be attracted to them shall be informed that all livestock carcasses or parts of carcasses shall be either packed, dragged, or otherwise transported to a location a minimum of ½ mile from any inhabited dwelling, sleeping area, tent, road, trail, or recreation site in as timely a manner as possible, unless otherwise directed by a BLM range/wildlife specialist or ranger. Carcasses shall be moved at least 100 yards from live water. Other options for carcass disposal may include using explosives or burning the carcass at the discretion of a BLM range/wildlife specialist or ranger. In cases of uncertainty about carcass disposition the permit holder (or lessee) shall contact the appropriate BLM field office.
- The BLM shall require that the Proper Functioning Condition of existing aquatic systems and riparian zones in occupied grizzly bear habitat be maintained for all BLM-administered public lands. If these areas are polluted and/or damaged from activities, lessee/permittee/ grantee or the BLM will be required to assume full responsibility for rehabilitation and restoration of such areas (from IGBC 1986).
- The BLM shall require that existing roads, drilling pads, and other areas with vegetation removed due to authorized activities in occupied grizzly bear habitat will be revegetated and reclaimed by lessee/permittee/grantee in a fashion that considers all grizzly bear needs or requirements.
- Wild horse roundups and other intensive wild horse management activities will avoid areas in or immediately adjacent to occupied grizzly bear habitat.

9.4.3. Best Management Practices

BMPs for this species as identified in the BLM statewide programmatic BA (BLM 2006) and the Biological Opinion (USFWS 2006b) for the BLM's statewide programmatic BA. These BMPs are to be considered on a case-by-case basis at the project level and implemented to further protect the grizzly bear. BMPs include the following:

- With the intent of reducing potential conflicts between grizzly bears and livestock and the BLM should phase out sheep allotments in occupied grizzly bear habitat as the opportunity arises. Existing sheep allotments in occupied grizzly bear habitat should be monitored and evaluated for conflicts between grizzly bears and sheep. The BLM should offer no new permitted sheep AMUs in grizzly bear habitat where conflicts have occurred in the past, or are likely to occur in the future

- The BLM should adjust management of domestic livestock on public land allotments or leases to minimize grizzly bear-livestock conflicts (e.g., season of use, class of livestock, etc.).
- The BLM should include a clause on all use authorizations that allows for permanent cancellation, temporary cancellation, or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation.
- Wherever possible, the BLM should reduce motorized access routes in occupied grizzly bear habitat and will try to avoid authorizing any new motorized access in occupied grizzly bear areas (e.g., big game ranges).
- Wherever possible, the BLM will implement appropriate closures or seasonal restriction areas to cross-country motorized travel to provide more security in occupied grizzly bear habitat.
- Where possible, maintain road densities of less than one mile per square mile in occupied grizzly bear habitat. Where existing road densities are currently below 1 mile per square mile, avoid increases in road density to maintain management options and secure habitat. Consider all big game winter range areas as areas where road density objectives are less than 1 mile of road per square mile.
- The BLM should initiate a habitat mapping and monitoring effort for the grizzly bear. Habitat mapped on BLM lands will be done using Geographic Information System (GIS) technology. Secure habitat, open motorized access route density ([OMAARD] refers to roads that are actively used) greater than 1 mile per square mile, and total motorized access route density ([TMARD], includes all roads, even gated roads) greater than 2 miles per square mile will be monitored utilizing the Yellowstone Grizzly Bear Cumulative Effects Model (CEM) GIS databases and will be reported annually, as described in ICST (2003) and conducted in the Primary Conservation Area (PCA).
- In areas of vital importance to grizzly bears (e.g., known denning areas, army cutworm moth aggregations, cutthroat trout spawning sites, spring ungulate concentration sites, etc.) activities that adversely affect grizzly bear populations and/or their habitat should be avoided. Adverse habitat effects could result from land surface disturbances; water table alterations; reservoirs, ROWs, roads, pipelines, canals, transmission lines, or other structures; increased human foods; and reduced availability of natural foods. Areas of vital importance to grizzlies are identified through the evaluation process described in the Grizzly Bear Management Guidelines (IGBC 1986).

9.5. North American Wolverine Conservation Measures

9.5.1. Proposed Protections under the Bighorn Basin Proposed RMP

The Bighorn Basin Proposed RMP does not identify specific protection measures for the North American wolverine.

9.5.2. Conservation Measures Committed to by the BLM

Conservation measures for this species have not yet been identified by the BLM. A statewide programmatic BA may be developed by the BLM following the USFWS final listing determination on or before August 4, 2014.

9.5.3. Best Management Practices

BMPs for this species have not yet been identified by the BLM. A statewide programmatic BA may be developed by the BLM following the USFWS final listing determination on or before August 4, 2014.

9.6. Ute Ladies'-tresses Conservation Measures

9.6.1. Proposed Protections under the Bighorn Basin Proposed RMP

There are no specific conservation measures for Ute ladies'-tresses identified under the Bighorn Basin Proposed RMP.

9.6.2. Conservation Measures Committed to by the BLM

Conservation measures for this species as identified in the BLM statewide programmatic BA (BLM 2007c) and the Biological Opinion (USFWS 2007b) for the BLM's statewide programmatic BA include the following:

- Surface disturbance will be prohibited within 500 feet of surface water and/or riparian areas.
- No Surface Occupancy will be allowed within special management areas (e.g., known threatened or endangered species habitat).
- Portions of the authorized use area are known or suspected to be essential habitat for threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of this species. In the event that an occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).
- Within the potential of the ecological site (soil type, landform, climate, and geology), the BLM will ensure that the soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.
- The BLM will ensure that grazing management practices will restore, maintain, or improve plant communities. Grazing management strategies consider hydrology, physical attributes, and potential for the watershed and the ecological site.
- The BLM will ensure that upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.
- The BLM will ensure that rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.
- The BLM will ensure that grazing management practices will incorporate the kinds and amounts of use that will restore, maintain, or enhance habitats to assist in the recovery of federally threatened and endangered species or the conservation of federally-listed species of concern and other State-designated special status species. Grazing management practices will maintain

existing habitat or facilitate vegetation change toward desired habitats. Grazing management will consider threatened and endangered species and their habitats.

- The BLM will maintain biological diversity of plant and animal species; support the Wyoming Game and Fish Department strategic plan population objective levels to the extent practical and to the extent consistent with BLM multiple use management requirements; maintain, and where possible, improve forage production and quality of rangelands, fisheries, and wildlife habitat; and to the extent possible, provide habitat for threatened and endangered and special status plant and animal species on all public lands in compliance with the Endangered Species Act and approved recovery plans.
- In any proposed new access, wetland and riparian areas will be avoided where possible.
- Grazing will be intensively managed within known habitat containing populations from July through September, to allow plants to bloom and go to seed.
- Recreational site development will not be authorized in known Ute ladies'-tresses habitat.
- The BLM will manage stream habitats to retain, re-create, or mimic natural hydrology, water quality, and related vegetation dynamics. Projects that may alter natural hydrology or water quality, change the vegetation of the riparian ecosystem and cause direct ground disturbance will be evaluated and redesigned to ensure that adverse effects to populations of the Ute ladies’-tresses do not occur.
- The BLM will add the following two conservation measures to grazing permit renewals in allotments with known Ute ladies’-tresses populations.
    - The BLM will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Ute ladies’-tresses populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Ute ladies'-tresses populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Ute ladies’-tresses populations and potential overgrazing of the areas occupied by the species. Surveys for Ute ladies'-tresses will be conducted in potential Ute ladies’-tresses prior to livestock operations related construction projects.
    - The BLM will not increase permitted livestock stocking levels in any allotment with pastures containing known Ute ladies’-tresses populations without consulting with the Service.
- Biological control of noxious plant species will be prohibited within 1.0 mile from known Ute ladies’-tresses habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The BLM will monitor biological control vectors.
- Except in cases of extreme ecological health (insect or weed outbreaks, infestations), herbicide treatment of noxious plants/weeds will be well-regulated within 0.25 miles of known populations of the Ute ladies'-tresses and insecticide/pesticide treatments will be well regulated within 1.0 mile of known populations of the orchid to protect pollinators.
- Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above the following will apply: where needed and only on a case-by-case basis, a pesticide use proposal or other site specific plan will address concerns of proper timing, methods of use, and chemicals. Pesticides specifics to dicots will be preferred where these are adequate to control the noxious weeds present.

- Aerial application of herbicides will be carefully planned to prevent drift in areas near known populations of the Ute ladies'-tresses (outside of the 0.25 mile buffer). The BLM will work with the Animal and Plant Health Inspection Service (APHIS), the Service, and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect the orchid.
- If revegetation projects are conducted within 0.25 miles of known habitat for the orchid, only native species will be selected. This conservation measure will reduce the possibility that nonnative species will be introduced and will compete with Ute ladies'-tresses orchid.
- The BLM will limit the use of off road vehicles (OHVs) to designated roads and trails within 0.5 mile of known Ute ladies'-tresses populations, with no exceptions for the "performance of necessary tasks" other than firefighting and hazardous material cleanup allowed using vehicles off of highways. No OHV competitive events will be allowed within 1.0 mile of known Ute ladies'-tresses orchid populations. Roads that have the potential to impact Ute ladies'-tresses orchid are not required for routine operations or maintenance of developed projects, or lead to abandoned projects will be reclaimed as directed by the Bureau.
- The BLM will apply a COA on all applications for permit to drill (APDs) oil and gas wells for sites within 0.25 miles of any known populations of the Ute ladies'-tresses. This condition will prohibit all authorized surface disturbance and OHV travel from sites containing populations of the Ute ladies'-tresses. Operations outside of the 0.25 mile buffer of Ute ladies'-tresses populations, such as "directional drilling" to reach oil or gas resources underneath the Ute ladies'-tresses habitat, would be acceptable.
- For known Ute ladies'-tresses populations, the BLM will place a Controlled Surface Use (CSU) stipulation prohibiting all surface disturbances on new oil and gas leases, buffering the area within 0.25 miles of known Ute ladies'-tresses populations. For existing oil and gas leases with known Ute ladies'-tresses populations (these would be for newly discovered populations not currently documented), the BLM will require the COA in conservation measure 19 above including the same 0.25 mile buffer area around those known Ute ladies'-tresses populations.
- The disposal (sale and removal) of salable minerals is a discretionary BLM action and is prohibited within a 0.25 mile buffer area of known populations of Ute ladies'-tresses orchids
- To prevent loss of habitat for the Ute ladies’-tresses, the BLM "shall retain in Federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival" (BLM 2001). Prior to any land tenure adjustments in known habitat for the Ute ladies'-tresses, the BLM will survey to assess the habitat boundary and retain that area in Federal ownership. Bureau-administered public lands that contain identified habitat for the Ute ladies’-tresses will not be exchanged or sold, unless it benefits the species.
- All proposed rights-of-way projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Ute ladies’-tresses habitat to minimize disturbances. If avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the Service.
- All proposed projects will be designed and locations selected to minimize disturbances to known Ute ladies’-tresses populations, and if the avoidance of adverse effects is not possible, the BLM will re-initiate consultation with the Service. Projects will not be authorized closer than 0.25 miles from any known Ute ladies’-tresses populations without concurrence of the USFWS and the BLM authorized officer. No ground disturbing construction activities will be authorized within 0.25 miles of any known Ute ladies'-tresses populations during the essential growing

season time period (from July to September, the growing, flowering and fruiting stages) to reduce impacts to the species.

- In order to conserve and protect natural areas, planned recreational foot trails are created to control human traffic. The BLM will create programs that will strive to protect the Ute-ladies'-tresses habitat and prevent new trails from being constructed within 0.25 miles from known occurrences of the orchid.

9.6.3. Best Management Practices

BMPs for this species as identified in the BLM statewide programmatic BA (BLM 2007c), and the Biological Opinion (USFWS 2007b) for the BLM's statewide programmatic BA. The BMPs are to be considered on a case-by-case basis at the project level and implemented to further protect the Ute ladies'-tresses. BMPs include the following:

- When project proposals are received, the BLM will initiate coordination with the USFWS at the earliest possible date so that both agencies can advise on project design. This should minimize the need to redesign projects at a later date to include orchid conservation meas**u**res, determined as appropriate by the USFWS.
- The BLM will participate in the development of a conservation agreement/assessment strategy and a species specific recovery plan for the orchid in coordination with the USFWS and other agencies as appropriate. Orchid habitat on BLM-administered lands will be monitored to determine if recovery/conservation objectives are being met.
- The BLM will coordinate with the USFWS, the Natural Resources Conservation Service, and private landowners to ensure adequate protection for the Ute ladies'-tresses and its habitat when new activities are proposed, and to work proactively to enhance the survival of the plant.
- In the event that a new population of the orchid is found, the USFWS Wyoming Field Office (307-772-2374) will be notified within 48 hours of discovery.
- Livestock grazing, mowing/haying, and some burning are specific management tools the BLM may use to maintain favorable habitat conditions for the orchid where feasible. Mowing and grazing, with proper timing and intensity, reduce the native and exotic plant competition for light and possibly for water, space, and nutrients.
- Recreational foot trails that may be located adjacent to Ute ladies'-tresses plant habitat should be constructed to reduce impacts to this species.
- To prevent loss of habitat for the Ute ladies'-tresses, the BLM "shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival." Prior to any land tenure adjustments in potential orchid habitat, the BLM will survey to assess the potential for the existence of the orchid. While it is difficult to assess whether the orchid was historically present on such sites, the BLM should try and retain in federal ownership all habitats essential for the survival and recovery of the orchid, including habitat that was used historically, that has retained its potential to sustain this listed species, and is deemed to be essential to their survival. Potential orchid habitat may be used for reintroduction efforts and is important for the recovery and enhancement of the species.
- Prescribed fire and grazing activities shall be coordinated between biologists, rangeland management specialists, and fire personnel to ensure that no damage occurs to the plant habitat when being used to maintain the habitat for the species.

- Maintain and restore the dynamics of stream systems, including the movement of streams within their floodplains, which are vital for the life-cycle of the orchid. Flow timing, flow quantity, and water table characteristics should be evaluated to ensure that the riparian system is maintained where these plants occur. The BLM should continue water use in a manner that maintains suitable habitat for the Ute ladies'-tresses orchid to benefit the species.
- Maintain and restore the natural species composition and structural diversity of plant communities in riparian zones and wetlands.
- For the protection of the Ute ladies'-tresses and its potential habitat, surface-disturbing activities listed above should be avoided in the following areas when they occur outside the protective 0.25-mile buffer from populations of the Ute ladies'-tresses: (a) identified 100-year flood plains, (b) areas within 500 feet from perennial waters, springs, wells, and wetlands, and (c) areas within 100 feet of the inner gorge of ephemeral channels.
- Form a steering committee to develop and prioritize management practices and assist Bureau and Service with research projects.
- Conduct inventories for the orchid in areas with potential habitat.
- Maintain a database of all searched, inventoried, or monitored orchid sites. Analyze vegetation treatments (mowing, prescribed fire, mechanical treatments, etc.) in known or potential habitat for the orchid to determine impacts to the species.
- Establish monitoring, biological, ecological, population demographics, and life history studies as funding and staffing allow, such as, monitoring current populations each year for trends, studies regarding identification of pollinators, genetics, life history, effects of pesticides and herbicides, seed viability and germination, and studies regarding monitoring the success of reintroduction efforts. Monitor orchid population sites for invasion by noxious and invasive plant species.
- Perform monitoring and analysis pertaining to flow timing, flow quantity, and water table characteristics with the goal of ensuring that riparian vegetation, in areas of known and potential habitat for the orchid, is maintained.
- When possible, collect and bank orchid seeds at local, regional, national, and international arboreta, seed banks, and botanical gardens as insurance against catastrophic events, for use in biological studies, and for possible introduction/reintroduction into potential habitat.
- Train law enforcement personnel on protections for the orchid and its habitat, its status, and current threats to its existence.
- Educate resource specialists, rangers, and fire crews about the orchid and its habitat to help with project design for the general area and for fire suppression actions occurring in potential habitat for the orchid and on the habitat characteristics and plant identification for the plant, so that if they encounter the orchid occurring in riparian habitat, they can report it to their office threatened and endangered species specialist.
- The BLM should work towards developing reintroduction sites in coordination with the Service and to maintain the integrity of these sites for the survival of the orchid. The objective would be to reintroduce populations of the orchid into areas of historic occurrence and introduce new populations in suitable habitat within the plant's historic range.
- Develop propagation techniques and use them to reintroduce/introduce the orchid and to repopulate known populations in the event population recovery becomes necessary.

This page intentionally left blank.

10.0 SUMMARY OF SPECIES STATUS IN THE FUTURE

Black-footed Ferret – The prairie dog, upon which the black-footed ferret depends for food and shelter, has fewer protective regulations than the ferret. The most recent reviews by the United States Fish and Wildlife Service (USFWS) for the black-tailed prairie dog (69 Federal Register [FR] 51217, August 18, 2004), white-tailed prairie dog (69 FR 64889, November 9, 2004), and Gunnison prairie dog (73 FR 6660, February 5, 2008) all concluded that inadequate regulatory mechanisms did not rise to the level of an important threat for any of these three species. Although it was concluded that this factor was not likely to cause any of these species to become threatened or endangered within the foreseeable future, most prairie dog populations may no longer be large or stable enough (due to plague and poisoning) to support ferrets. The prairie dog may be able to persist in smaller, more fragmented populations; however, these populations are often incapable of supporting ferrets. More protective regulations, particularly those related to poisoning and maintaining adequate prairie dog habitat, could improve opportunities for ferret recovery at what are now sites of marginal potential (USFWS 2008b).

The USFWS suggests that the additive and synergistic effects (i.e., poisoning, plague, habitat destruction) have likely impacted the black-footed ferret and have rendered many areas unsuitable for future recovery; however, the USFWS is unable to adequately describe and quantify these effects (USFWS 2008b).

It has been recommended by the USFWS that further evaluation and consideration be given to the merits of adding multi-generational wild born ferrets (animals exposed to natural selection processes) into the captive breeding program, as a separate captive population, to ensure the continued genetic fitness of the species and to maximize the number of animals available for reintroduction in future years (USFWS 2008b).

On March 6, 2013, the U.S. Fish and Wildlife Service (Service) issued a letter acknowledging 'block clearance' for the State of Wyoming in response to a request from the Wyoming Game and Fish Department. The letter provides acknowledgement that the likelihood of identifying wild ferrets in Wyoming, outside of those resulting from reintroductions, is distinctly minimal. The letter, and the analysis provided by the Wyoming Game and Fish Department, notes that despite improvements in knowledge, technology, survey techniques, and use of reward programs, there have been no verified reports of any extant black-footed ferret individuals or populations in any prairie dog complex since the discovery of a wild black-footed ferret population in 1981. It further states that it is unlikely that black-footed ferret populations in Wyoming have persisted through drastic reductions of prairie dog complexes, and that the black-footed ferret populations have not rebounded as prairie dog complexes have begun to expand again.

Consequently, the Service no longer recommends surveys for the black-footed ferrets in either black- or white-tailed prairie dog towns in the State of Wyoming. We recommend that project proponents and Federal action agencies protect all prairie dog towns or complexes for their value to the prairie ecosystem and the many species that rely on them, and that they evaluate potentially disturbed prairie dog towns for their value to future black-footed ferret reintroduction.

Canada Lynx – In 2003, the USFWS determined that climate change was not a threat to lynx within the contiguous United States distinct population segment because the best available science available at that time was uncertain in nature (68 FR 40083). Since that time, new information on regional climate changes and potential effects to lynx habitat has been developed, and this new information suggests that climate change may be an issue of concern for the future conservation of lynx because lynx distribution and habitat is likely to shift upward in elevation within its currently occupied range as temperatures increase (50 CFR Part 17). This information, combined with the information in 2003, still

needs to be evaluated further to determine how climate change might affect lynx and lynx habitat. The USFWS is evaluating the information in the 5-year review for lynx. In 2013 the USFWS revised the designation of critical habitat for the threatened contiguous United States (U.S.) distinct population segment (DPS) of the Canada lynx (*Lynx canadensis*) and to revise the DPS boundary to extend the protections of the Act to lynx everywhere they occur in the contiguous United States, including New Mexico, to include critical habitat for the lynx in areas occupied by the species that currently contain the physical and biological features essential to the conservation of the lynx (50 CFR Part 17). Revisions to the critical habitat designation may be necessary in the future to accommodate shifts in the occupied range of the lynx. The revised critical habitat units in this rule include higher-elevation habitats that lynx would be able to continue to use if lynx distribution or habitat shifted upward in elevation according to the USFWS (50 CFR Part 17).

The USFWS has acknowledged that climate change could change the suitability of lynx habitat in the future. However, the USFWS is required to designate critical habitat based upon the best available scientific and commercial data at the time they finalize the designation. In 2009, reliable projections of future climate changes in lynx habitat in the contiguous United States were not available. However, for mountain-dwelling species like lynx, the USFWS concluded that higher elevation habitat is likely to become increasingly important in the face of climate changes (50 CFR Part 17). Designated critical habitat units include the highest-elevation habitat in the areas, and these areas may become more important to the extent lynx distribution and habitat shift upward in elevation as temperatures increase. High elevation habitat was included in the proposed designation, and the USFWS determined it appropriate to include these high elevation habitats in the final designation (Federal Register 50 CFR Part 17).

Gray Wolf – According to the Wyoming Wolf Recovery Report (Jimenez et al. 2010), in 2009, more than 320 wolves in over 44 packs inhabited Wyoming including Yellowstone National Park (YNP). The wolf population increased statewide by approximately 6 percent, making 2009 the seventh consecutive year that the wolf population in Wyoming has exceeded the numerical, distributional, and temporal recovery goals established by the USFWS. The gray wolf population in Wyoming (outside YNP) increased by approximately 26 percent, consisting of more than 224 wolves in over 30 packs of which approximately 21 breeding pairs produced more than 89 pups that survived through December 31, 2009. Causes of mortality included: harvest or control outside YNP intraspecific pack strife, disease and malnutrition. Agency control efforts removed 31 depredating wolves (approximately 12% of the Wyoming wolf population outside YNP) to reduce livestock losses due to wolves (Jimenez et al. 2010). Numerous ongoing research projects are investigating predator-prey interactions, wolf population dynamics, elk habitat selection, disease, genetics, interactions between wolves and other predators, and livestock depredations. This information will help manage wolf populations.

In the Bighorn Basin Planning Area in the future, the gray wolf may be affected by oil field exploration proposed for the western side of the Big Horn Mountains, bentonite and gypsum mining on the western side of the Big Horn Mountains, seismic exploration outside of the town of Clark, near the Clarks Fork River, and possible coal exploration throughout the Cody Field Office (BLM 2004a).

The States of Montana and Idaho have adopted State laws, management plans, and regulations that the USFWS determine will conserve a recovered wolf population into the foreseeable future [Federal Register: April 2, 2009 (Volume 74, Number 62) Rules and Regulations Page 15123-15188].

As habitats or sites for any future listed species are identified within a resource area, protection measures will be developed in consultation with the USFWS (BLM 2004a). In the future, management prescriptions for potential habitat will include consideration for future occupancy by threatened and

endangered species. Key habitat characteristics will be identified to help ensure maintenance of high quality areas for natural reoccupation (BLM 2004a).

Grizzly Bear – Researchers are particularly concerned about impacts of future climate warming on two very important foods, seeds of whitebark pine and aggregated army cutworm moths. These two species occur at high elevations (greater than 8,200 feet and greater than 10,170 feet, respectively) and are therefore particularly susceptible to climate warming. Worst-case scenarios predict total elimination of these food sources in the Greater Yellowstone Area (GYA).

Large area requirements, low reproductive potential, and sensitivity to human disturbance contribute to intrinsic vulnerability in this species. Throughout their range, documented human disturbances include helicopter and fixed-wing aircraft flying overhead, hydrocarbon exploration and development, hydroelectric development, timber extraction, recreational activities, and roads and highways. These disturbances may result in displacement and/or disruption of normal behavior patterns such as copulation, movement, denning, foraging, physiological arousal without overt behavioral response, and even direct loss of habitat via avoidance.

Grizzly bear population have grown since 1983, with 34 bears monitored in the Greater Yellowstone Ecosystem in 1980, and 112 monitored in 2012 (USGS 2012). Grizzlies are raising cubs in all portions of the recovery zone, and cub survival is high. They are also dispersing into new habitat well outside of the recovery zone. Of the estimated 593 grizzlies living in the area, approximately 150 have home ranges wholly or partially in Yellowstone National Park. Other bears range south into the Wind River Range, north through the Gallatin Range, and east of the Absaroka Mountains onto the Plains.

North American Wolverine – Wolverines naturally occur in low densities and in isolated populations, even within high quality habitats. Research suggests that landscape features that facilitate or impede immigration and emigration are critical for the conservation of this species (Ruggiero et al. 2007). Given that persistent snow cover through the spring denning period is critical for successful natal dens, researchers are particularly concerned about impacts of climate change (Ruggiero et al. 2007).

Because wolverine habitat is generally inhospitable to human use and occupation and most wolverine habitat is also federally managed in ways that must consider environmental impacts, wolverines are somewhat insulated from impacts of human disturbances from industry, agriculture, infrastructure development, or recreation. Wolverine home ranges generally do not occur near human settlements, and this separation is largely due to differential habitat selection by wolverines and humans (May *et al.* 2006, pp. 289-292; Copeland *et al.* 2007, p. 2211). There is no evidence that wolverine dispersal is affected by infrastructure development.

Few effects to wolverines from land management actions such as grazing, timber harvest, and prescribed fire have been documented. Wolverines in British Columbia used recently logged areas in the summer and moose winter ranges for foraging (Krebs *et al.* 2007, pp. 2189-2190). Males did not appear to be influenced strongly by the presence of roadless areas (Krebs *et al.* 2007, pp. 2189-2190). In Idaho, wolverines used recently burned areas despite the loss of canopy cover (Copeland 1996, p. 124).

Intensive management activities such as timber harvest and prescribed fire do occur in wolverine habitat; however, for the most part, wolverine habitat tends to be located at high elevations and in rugged topography that is unsuitable for intensive timber management. Much of wolverine habitat is managed by the U.S. Forest Service or other Federal agencies and is protected from some practices or activities such as residential development. In addition, much of wolverine habitat within the contiguous United States is already in a management status such as wilderness or national park (see Factor D for more discussion) that provides some protection from management, industrial, and recreational activities. Wolverines are not thought to be dependent on specific vegetation or habitat features that

might be manipulated by land management activities, nor is there evidence to suggest that land management activities are a threat to the conservation of the species.

The wolverine population of the GYA is cumulatively influenced by a complexity of land ownerships and management authorities (Inman et al. 2012). The implementation of a conservation strategy that addresses wolverine needs in a coordinated fashion would encourage persistence of this species; however, the population of wolverines in the GYA is likely too small for a viable population (Inman et al. 2012). A viable population may require an area as large as the western United States and wolverine conservation strategies would be most effective by development of an empirical prediction of wolverine habitat across the western United States (Inman et al. 2012).

Ute Ladies'-tresses – According to NatureServe (2009), the Ute ladies'-tresses are declining 10 to 30 percent. Population monitoring studies in Colorado and Utah have projected long-term declines if not extirpations in both riparian corridor and wet meadow settings and under current land use practices without conservation intervention (NatureServe 2009). In Idaho, long-term monitoring has detected local extirpation of subpopulations as habitat condition deteriorates through flooding or vegetative succession. New monitoring and demographic research have documented that populations are more stable than originally suspected, because most past monitoring studies had focused on counts of flowering plants, which are more likely to fluctuate than counts that include more cryptic vegetative, fruiting, and dormant plants (NatureServe 2009). Most of the multi-year monitoring studies based on flowering plants exhibit an oscillating trend, alternating between periods of increase and decrease around a relatively stable mean. This species also appears more tolerant of human-induced disturbances than originally supposed, based on the discovery of additional populations in extensively human-modified habitats (NatureServe 2009).

In the planning area in the future, the Ute ladies'-tresses habitat may be affected by development in or near wetlands, water diversions, channelization, and irrigation. All of these factors decrease the input of water into riparian systems or completely destroy habitat, thus eliminating potential habitat for this species. Invasive plants may also affect habitat (BLM 2007).

11.0 REFERENCES

APHIS (Animal and Plant Health and Inspection Service) and BLM (Bureau of Land Management). 2003. Memorandum of Understanding Document #03-8100-0870-MU, February 27, 2003.

Bartos, D.L. 2001. Landscape Dynamics of Aspen and Conifer Forests. U.S. Department of Agriculture (USDA) Forest Service Proceedings RMRS-P-18.

Bartos, D.L., and R.B. Campbell. 1998. Decline of Aspen in the Interior West – Examples from Utah. Rangelands 20(1):17-24.

BHBLWG (Big Horn Basin Sage Grouse Local Working Group). 2007. Sage Grouse Conservation Plan for the Bighorn Basin. BLM Worland Office, Wyoming Game and Fish Department, National Resource Conservation Service, and other private sector stakeholders. August 31.

BLM. 1984b. West Slope Habitat Management Plan.

BLM. 1984c. 8400 - Visual Resource Management, BLM Manual. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C.

BLM. 1986a. Absaroka Front Habitat Management Plan. W1-WHA-T10.

BLM. 1986b. Manual 8410-1, Visual Resource Inventory. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C. Available on Internet: http://www.blm.gov/nstc/VRM/8410.html.

BLM. 1986c. Manual 8431-1, Visual Resource Contrast Rating. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C. Available on Internet: http://www.blm.gov/nstc/VRM/8431.html.

BLM. 1986d. Historic Trails Plans 1986. Oregon/Mormon Pioneer National Historic Trails Management Plan. U.S. Department of the Interior, Bureau of Land Management. Wyoming State Office, Cheyenne, Wyoming.

BLM. 1987. Bighorn River Habitat and Recreation Management Plan. Prepared in cooperation with the Wyoming Game and Fish Department.

BLM. 1988. Washakie Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management, Worland District Office, Worland, Wyoming.

BLM. 1990. Cody Resource Area – Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management, Cody Resource Area, Cody, Wyoming.

BLM. 1994. Decision Record and Finding of No Significant Impact for the Washakie Resource Area Reservoir Habitat Management Plan, WY-010-WHA-T23. Environmental Assessment EA-WY-015-EA2-78.

BLM. 1995. H-8550-1 Interim Management Policy and Guidelines for Lands Under Wilderness Review. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C.

BLM. 1998b. Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the BLM in the State of Wyoming.

BLM. 2001. BLM Manual 6840, Special Status Species Management. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C.

BLM. 2004a. Final Statewide Programmatic Gray Wolf Biological Assessment. Department of the Interior, Bureau of Land Management, Wyoming State Office. Cheyenne, Wyoming. September.

BLM. 2004b. Fire Management Plan: Wyoming Northern Zone. U.S. Department of the Interior, Bureau of Land Management. Worland, Wyoming. Available on Internet: http://www.blm.gov/wy/st/en/programs/Fire/planning.html.

BLM. 2004c. BLM National Sage-Grouse Habitat Conservation Strategy. November.

BLM. 2005a. Final Statewide Programmatic Biological Assessment: Black-footed Ferret (*Mustela nigripes*). Submitted to U.S. Department of the Interior, Bureau of Land Management. Wyoming State Office. Cheyenne, Wyoming. August 25.

BLM. 2005b. Final Statewide Programmatic Canada Lynx (*Lynx canadensis*) Biological Assessment. U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office. July 20.

BLM. 2006. Final Statewide Programmatic Grizzly Bear (*Ursus arctos*) Biological Assessment. U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office. September 30, 2005 (Updated June 29, 2006).

BLM. 2007a. Surface Operating Standards and Guidelines for Oil and Gas Development and Exploration. The Gold Book. Fourth Edition. Revised 2007.

BLM. 2007b. Burned Area Emergency Stabilization and Rehabilitation Handbook. H-1742-1. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C. Available on Internet: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.Par.52739.File.dat/h1742-1.pdf.

BLM. 2007c. Final Report Statewide Programmatic Biological Assessment Ute Ladies-Tresses Orchid (*Spiranthes diluvialis*). U.S. Bureau of Land Management Wyoming State Office. October 2005 (With Final Edits – 7 March 2007).

BLM. 2008a. MS-8380 Cave and Karst Management. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C.

BLM. 2008b. LR2000 – Land and Mineral Legacy Rehost 2000 System. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C. Available on Internet: http://www.blm.gov/lr2000/.

BLM. 2009a. Summary of the Analysis of the Management Situation for the Buffalo Field Office. U.S. Department of the Interior, Bureau of Land Management, Buffalo Field Office. Buffalo, Wyoming. Available on Internet: http://www.blm.gov/wy/st/en/programs/Planning/rmps/buffalo/docs.html.

BLM. 2009b. Summary of the Analysis of the Management Situation for the Bighorn Basin Planning Area, U.S. Department of the Interior, Bureau of Land Management, Cody Field Office and Worland Field Office. Available on Internet: http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn/docs.html.

BLM. 2009c. Solid Mineral Occurrence and Development Potential Report: Bighorn Basin Resource Management Plan Revision Project. U.S. Department of the Interior, Bureau of Land Management, Cody Field Office and Worland Field Office, Wyoming. Available on Internet: http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn/docs.html.

BLM. 2009d. Proposed Oil Shale and Tar Sands Resource Management Plan Amendments to Address Land Use Allocations in Colorado, Utah and Wyoming and Final Programmatic Environmental Impact Statement. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C.

BLM. 2009e. Reasonable Foreseeable Development Scenario for Geothermal, Bighorn Basin Planning Area, Wyoming. Prepared by Wyoming Reservoir Management Group. U.S. Department of the Interior, Bureau of Land Management. March 13.

BLM. 2009f. Instruction Memorandum No. 2009-138, Confidentiality of Paleontological Locality Information Under the Omnibus Public Lands Act of 2009 (123 Stat. 991), Title VI, Subtitle D, Paleontological Resources Preservation (OPLA-PRP). June 5, 2009. Available on Internet: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-138.html. Accessed July 20, 2009.

BLM. 2009g. Instruction Memorandum No. 2009-113, Casual Collecting of Common Invertebrate and Plant Paleontological Resources under the Paleontological Resources Preservation Act of 2009. April 24, 2009. Available on Internet: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-113.html. Accessed July 20, 2009.

BLM. 2009h. Recreation Planning. U.S. Department of the Interior, Bureau of Land Management. Washington, D.C. Available on Internet: http://www.blm.gov/wo/st/en/prog/Recreation/national_recreation/recreation_planning.print.html. Accessed August 2009.

BLM. 2010. BLM Wyoming Sensitive Species Policy and List. U.S. Department of the Interior, Bureau of Land Management. Wyoming State Office, Cheyenne, Wyoming. March 31, 2010. Available on Internet: http://www.blm.gov/pgdata/etc/medialib/blm/wy/resources/efoia/IMs/2010.Par.41285.File.dat/wy2010-027atch2.pdf.

BLM and DOE (Department of Energy). 2003. Assessing the Potential for Renewable Energy on Public Lands. February. U.S. Department of the Interior, Bureau of Land Management. U.S. Department of Energy, Energy Efficiency and Renewable Energy.

BLM and USFS (U.S. Forest Service). 2008. Final Programmatic Environmental Impact Statement for Geothermal Leasing in the Western United States. Available on Internet: http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal_nationwide.html.

BLM, Montana DEQ (Department of Environmental Quality), and MBOGC (Montana Board of Oil and Gas Conservation). 2003. Montana Final Statewide Oil and Gas Environmental Impact Statement (EIS) and Proposed Amendment of the Powder River and Billings Resource Management Plans. Available on Internet: http://www.deq.state.mt.us/coalbedmethane/finaleis.asp.

Cooperative Riparian Restoration Montana. 2006. Proper Functioning Condition, Montana Training Sessions for 2006. Available on Internet: http://water.montana.edu/pdfs/2006_pfc.pdf.

DOE and BLM. 2008. Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal Land in the 11 Western States (DOE/EIS-0386).

DOI (U.S. Department of the Interior). 2006. Interagency Burned Area Emergency Response Guidebook. U.S. Department of the Interior. Washington, D.C. Available on Internet: http://www.fws.gov/fire/ifcc/esr/Policy/es_handbook_2-7-06.pdf. Accessed October 15, 2009.

DOI (U.S. Department of the Interior). 2010. Memorandum of Understanding between the Bureau of Land Management and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds. BLM MOU WO-230-2010-04. Washington, D.C.

Griffith, G.E., and J.M. Omernik. 2009. Encyclopedia of Earth. Available on Internet: http://www.eoearth.org/article/Ecoregions_of_Wyoming_(EPA).

Headwaters Economics. 2007. A Socioeconomic Profile: Park County, Wyoming. Produced by the Economic Profile System. Available on Internet: http://www.headwaterseconomics.org/eps/.

Harrell, D., and L. Marks. 2009. Habitat Selection and Changes in the White-tailed and Black-tailed Prairie Dog Population within the Northern Bighorn Basin, Wyoming. Technical Note 431. U.S. Department of the Interior, Bureau of Land Management. Cody Field Office, Wyoming. BLM/WY/ ST-09/031+1110. 16 pp.

Heart Mountain Wyoming Foundation. 2009. Heart Mountain - A Story Worth Remembering. Available on Internet: http://www.heartmountain.us/history.htm. Accessed August 5, 2009.

ICST (Interagency Conservation Strategy Team). 2003. Final Conservation Strategy for the Grizzly Bear in the Yellowstone Ecosystem.

Interagency Lynx Biology Team. 2013. Canada lynx conservation assessment and strategy. 3rd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-13-19, Missoula, MT. 128 pp.

IHS Energy Group. 2009. Rocky Mountain United States Well Data: Network License for PI/Dwights PLUS Version 1.7.

Inman, R.M., Packila, M.L., Inman, K.H., McCue, A.J., White, G.C., Persson, J, Aber, B.C., Orme, M.L., Alt, K.L., Cain, S.L., Frederick, J.A., Oakleaf, B.J., Sartorius, S.S. 2012. Spatial Ecology of Wolverines at the Southern Periphery of Distribution. Journal of Wildlife Management 76(4): 778-792.

Jimenez, M.D., D.W. Smith, D.R. Stahler, E. Albers, and R.F. Krischke. 2010. Wyoming Wolf Recovery 2009 Annual Report. Pages WY-1 to WY-28 in U.S. Fish and Wildlife Service Rocky Mountain Wolf Recovery 2009 Annual Report. USFWS, Ecological Services, Helena, Montana.

McKelvey, K.S., J.J. Claar, G.W. McDaniel, and F. Hanvey. 1999. National Canada lynx detection protocol. U.S. Forest Service Northern Rocky Mountain Research Station, Missoula, MT.

Murphy, K.M., T. Potter, J. Halfpenny, K. Gunther, T. Jones, and P. Lundberg. 2006. Distribution of Canada lynx in Yellowstone National Park, Wyoming. Northwest Science 80:199-206.

NatureServe. 2009. NatureServe Explorer: An Online Encyclopedia of Life [web application]. Version 7.1. (2 February 2009). Data Last Updated October 2009. NatureServe, Arlington, Virginia. Available on Internet: http://www.natureserve.org/explorer. Accessed June 22-25, 2010.

NPS (National Park Service). 2009. Heart Mountain Relocation Center. National Historic Landmark Program. U.S. Department of the Interior, National Park Service. Available on Internet: http://tps.cr.nps.gov/nhl/detail.cfm?ResourceId=1164118837& ResourceType=District. Accessed August 5, 2009.

Roberts, S.B., and G.S. Rossi. 1999. Chapter SB: A Summary of Coal in the Fort Union Formation (Tertiary), Bighorn Basin, Wyoming and Montana, in U.S. Geological Survey Professional Paper 1625-A. Available on Internet: http://pubs.usgs.gov/pp/p1625a/Chapters/SB.pdf.

Rogers, P. 2001. Using Forest Health Monitoring to Assess Aspen Forest Cover Change in the Southern Rockies Ecoregion. Ogden, Utah: USDA Forest Service, Rocky Mountain Research Station, p. 5.

Ruediger, B., S. Mighton, B. Naney, T. Rinaldi, F. Wahl, N. Warren, D. Wenger, A. Williamson, L. Lewis, B. Holt, G. Patton, A. Vandehey, and S. Gniadek. 2000. Canada Lynx Conservation Assessment and Strategy. Unpublished interagency document prepared for the U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management and National Park Service. Missoula, Montana.

Ruggiero, L.F., McKelvey, K.S., Aubry, K.B., Copeland, J.P., Pletscher, D.H., and Hornocker, M.G. 2007. Wolverine Conservation and Management. Journal of Wildlife Management 71(7): 2145-2146.

Sage-Grouse NTT (National Technical Team). 2011. A Report on National Greater Sage-Grouse Conservation Measures. December.

Seglund et al. 2004. Wyoming Black-tailed Prairie Dog Management Plan and the White-tailed Prairie Dog Conservation Assessment.

USFWS (U.S. Fish and Wildlife Service). 1988. Black-footed Ferret Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado. 154 pp.

USFWS. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Section 7 Consultations and Conferences. U.S. Fish and Wildlife Service, National Marine Fisheries Service. March.

USFWS. 1993. Grizzly Bear Recovery Plan. U.S. Fish and Wildlife Service. Natural Science 312, University of Montana, Missoula, Montana.

USFWS. 2004. Block Clearance Letter (ES-61411/BFF/WY7746) Indicating that Black-Footed Ferret Surveys Are No Longer Required In All Black-tailed Prairie Dog Colonies Statewide or In White-tailed Prairie Dog Towns Except Those Noted In an Attachment. February 2, 2004. From the office of Brian T. Kelly, Field Supervisor, Wyoming Field Office.

USFWS. 2005a. U.S. Fish and Wildlife Service Biological Opinion for the BLM's Final Statewide Programmatic Biological Assessment: Canada lynx (*Lynx canadensis*). August 9, 2005. From the USFWS Cheyenne, WY, Ecological Field Office.

USFWS. 2005b. U.S. Fish and Wildlife Service Biological Opinion for the BLM's Final Statewide Programmatic Biological Assessment: Gray wolf (*Canis lupus*). March 21, 2005. From the USFWS Cheyenne, WY, Ecological Field Office.

USFWS. 2006a. U.S. Fish and Wildlife Service Biological Opinion for the BLM's Final Statewide Programmatic Biological Assessment: Black-footed ferret (*Mustela nigripes*). January 10, 2006. From the USFWS Cheyenne, WY, Ecological Field Office.

USFWS. 2006b. U.S. Fish and Wildlife Service Biological Opinion for the BLM's Final Statewide Programmatic Biological Assessment: Grizzly Bear (*Ursus arctos horribilis*). September 1, 2006. From the USFWS Cheyenne, WY, Ecological Field Office.

USFWS. 2007b. U.S. Fish and Wildlife Service Biological Opinion for the BLM's Final Statewide Programmatic Biological Assessment: Ute ladies'-tresses (*Spiranthes diluvialis*). April 5, 2007. From the USFWS Cheyenne, WY, Ecological Field Office.

USFWS. 2008a. Current List of Threatened, Endangered, Proposed, and Candidate Species That May Occur In the Bighorn Basin Planning Area. Ecological Service Office, Cheyenne, Wyoming. November 13.

USFWS. 2008b. Black-footed Ferret (*Mustela nigripes*) 5-Year Status Review: Summery and Evaluation. U.S. Fish and Wildlife Service.

USFWS. 2009a. U.S. Fish and Wildlife Service Spotlight Species Action Plan for the Black-footed Ferret. U.S. Fish and Wildlife Service.

USFWS. 2009b. Environmental Assessment – Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of Canada Lynx. U.S. Fish and Wildlife Service Region 6. February.

USFWS. 2009c. U.S. Fish and Wildlife Service Spotlight Species Action Plan for Greater Sage-Grouse (*Centrocercus urophasianus*). Mountain-Prairie Region (Region 6), Denver, Colorado; Wyoming Ecological Services Field Office.

USFWS. 2010a. Species Profile for the Greater Sage Grouse. U.S. Fish and Wildlife Service. Available on Internet: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W. Accessed June 22, 2010.

USFWS. 2010b. Fact Sheet Regarding the Status Review Finding: Endangered Species Act Listing Decision for the Greater Sage Grouse. U.S. Fish and Wildlife Service. March 5.

USFWS et al. 2010. Information Bulletin: Greater Sage-Grouse as a Candidate Species in Wyoming. USFWS, WYGFD, BLM, NRCS, and USFS. March 5.

USFWS. 2013. Block Clearance Letter to Scott Talbott of WGFD, indicating that Black-Footed Ferret Surveys Are No Longer Required In All Black-tailed and White-tailed Prairie Dog Colonies for the Balance of Wyoming, Statewide. March 6, 2013. From the office of Pete Gober, Deputy Regional Director.

USFWS. 2014. Species Profile for the North American Wolverine. U.S. Fish and Wildlife Service. Available on Internet: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0FA. Accessed April 10, 2014.

USGS (U.S. Geological Survey). 2008. Assessment of Moderate- and High-Temperature Geothermal resources of the United States; Fact Sheet 2008-3082, 4 pp. U.S. Geological Survey.

USGS (U.S. Geological Survey). 2012. Yellowstone Grizzly Bear Investigations, Annual Report of the Interagency Grizzly Bear Study Team. Available on Internet http://www.nrmsc.usgs.gov/science/igbst/pubs

Washakie County Conservation District. 2009. History of the Washakie County Conservation District. Available on Internet: http://www.conservewy.com/history.htm.

WGFD (Wyoming Game and Fish Department). 2001. Strategic Habitat Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming. Available on Internet: http://gf.state.wy.us/habitat/StrategicPlan/index.asp.

WGFD and BLM. 1990. Umbrella Memorandum of Understanding Between Wyoming Game and Fish Department and United States Department of the Interior Bureau of Land Management (Wyoming) for Management of Fish and Wildlife Resources on the Public Lands. March.

WOGCC (Wyoming Oil and Gas Conservation Commission). 2009. Wyoming Well Data and Statistics: Wyoming Oil and Gas Conservation Commission Online database. Available on Internet: http://wogcc.state.wy.us.

WYNDD (Wyoming Natural Diversity Database). 2010. Mammal Species of Concern. Available on Internet: http://uwadmnweb.uwyo.edu/wyndd/info.asp?p=3913. Accessed June 25, 2010.

Wyoming DEQ (Department of Environmental Quality) AMLD (Abandoned Mine Land Division). 2008. Personal Communication between Bureau of Land Management and Wyoming DEQ regarding the location of AML sites within the Bighorn Basin Planning Area.

Wyoming Interagency Vegetation Committee. 2002. Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management. Wyoming Game and Fish Department and Wyoming BLM. Cheyenne, Wyoming, 53 pp.

Wyoming Office of the Governor. 2008. State of Wyoming Executive Department Executive Order EO-2008-2 Greater Sage-Grouse Core Area of Protection.

Wyoming State Division of Forestry. 2001. Wyoming Forest Health Report. Available on Internet: http://slfweb.state.wy.us/forestry/adobe/wyfhm.pdf.

Wyoming Water Development Commission. 2003. Wind/Bighorn River Basin Water Plan. Available on Internet: http://waterplan.state.wy.us/plan/bighorn/bighorn-plan.html.

Young, J.A., B.M. Christensen, M.S. Schaad, M.E. Herdendorf, G.F. Vance, and L.C. Munn. 1999. A Geographic Information System to Identify Areas for Alternative Crops in Northwestern Wyoming. pp. 176–180. In: J. Janick (ed.), Perspectives on New Crops and New Uses. ASHS Press, Alexandria, Virginia.

This page intentionally left blank.

Final Biological Assessment

Bighorn Basin Resource Management Plan Revision Project

Appendix A

Livestock Grazing Allotments Occurring Within
General Grizzly Bear Habitat

LIST OF TABLES

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat A-1

This page intentionally left blank.

APPENDIX A

LIVESTOCK GRAZING ALLOTMENTS OCCURRING WITHIN GENERAL GRIZZLY BEAR HABITAT

Livestock grazing management actions that may occur in occupied grizzly bear habitat would be expected to disturb resident grizzly bears. Grizzly bear general distribution overlaps approximately 122 grazing allotments in the Bighorn Basin Planning Area, resulting in approximately 195,967 acres of land shared between the two elements. Table A-1 provides a list of the livestock grazing allotments that overlap the general distribution of grizzly bears in the Bighorn Basin Planning Area.

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat

Allotment Number	Allotment Name	Federal Acres	Type Management	# of Pastures	Season of Use	Type of Livestock
00515	Upper Gooseberry	3301	Deferred Rotation	6	3/1-2/28	Bison/Cattle
00516	Blue Creek	1888	Deferred Rotation	4	5/1-12/1	Cattle
00519	Middle Creek	545	AMP	1	6/1-6/30; 10/1-10/22	Cattle
00520	Red Creek	124	AMP	1	6/15-10/1	Cattle
00524	Cottonwood Creek	1202	Deferred Rotation	3	6/15-10/19	Cattle/Horse
00525	Rock Creek	4311	AMP	1	No Current Permit	None
00532	Whisky Gulch	356	Deferred Growing Season Use	1	7/1-10/22	Cattle/Horse
00540	Bridges	757	Deferred Rotation	1	5/15-6/30; 10/1-12/15	Cattle
00541	Three Peaks	985	Deferred Rotation	1	7/1-9/30	Cattle
00552	Milk Creek	382	Deferred Rotation	1	6/16-9/30	Cattle
00556	21 Creek	1808	Deferred rotation spring/summer/fall	1	10/13-11/8	Cattle
00558	Buck Creek	488	None	1	6/21-9/25	Cattle
00560	SFNF	1086	Cattle Grazing 1 Out of 3 Years	1	7/16-9/14	Cattle
00568	Basin	8527	AMP	2	No Current Permit	None
00569	Curtis	3388	AMP	2	No Current Permit	None
00575	Slab Creek	1016	AMP	1	No Current Permit	None
00584	Jones Flat	121	AMP	1	No Current Permit	None
00595	Iron Creek	1312	Deferred Rotation	1	No Current Permit	Cattle

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat (continued)

Allotment Number	Allotment Name	Federal Acres	Type Management	# of Pastures	Season of Use	Type of Livestock
00599	Gooseberry	3108	Deferred Rotation	1	3/1-6/15; 11/16-2/28	Cattle
00600	Wall Rock	1084	Deferred Rotation	1	6/16-11/15	Cattle
00601	Mormon Creek	307	Deferred Rotation	1	6/16-11/15	Cattle
00604	LU	101548	Deferred Rotation	35	5/1-11/30	Cattle/Horse
00607	Lake	3621	Restricted Growing Season Use	1	6/1-6/30; 7/1-2/28	Cattle
00609	Owl Creek	1867	Cattle Grazing 1 Out of 3 Years	1	7/1-9/30	Cattle/Horse
00615	Lime Ridge	959	AMP	1	6/24-10/15	Cattle
00627	Rooster Creek	3017	Deferred Rotation	4	5/1-10/31	Cattle/Horse
00632	Dick Creek	182	Total Deferment	1	11/1-11/30	Cattle
00633	Upper Pastures	4463	AMP	7	6/1-10/9	Cattle
00661	Three Peaks Anchor	6714	AMP	1	No Current Permit	None
00672	Mountain	1002	AMP	1	6/26-10/4	Cattle
00680	Lake Creek Pasture	758	AMP	1	No Current Permit	None
00681	Spring Creek	1611	AMP	1	No Current Permit	None
02502	Armstrong	372	None	1	6/1-8/31	Cattle
02504	Carter Mountain	7,540	Livestock Trailing	1	7/15-9/15	Cattle
02510	Gould Ind.	2,310	AMP	1	6/10-7/14	Cattle
02511	Gould N. Ind.	93	Non-growing Season Use	1	10/1-3/1	Cattle
02519	Newell Springs	1,186	Total Deferment (River excluded)	2	7/1-11/30	Cattle
02522	Kruger Sec 15	80	None	1	6/15-9/17	Cattle
02523	Kukla Sec. 15	1191	Non-Growing Season Use	1	10/18-2/28	Cattle
02528	Cedar Mountain	1,098	None	1	Non use	None
02532	Pitchfork	5,929	Total Deferment	2	11/1-2/26	Cattle
02544	Tonopah Ridge	3,261	Deferred Rotation (Spring-Winter/ Winter)	2	5/20-6/30; 10/16-1/31	Cattle
02545	91 Ranch	9,419	Rest Rotation (Spring/Rest)	6	3/12-2/28	Cattle
02563	Larsen Sec 15	515	None	1	5/16-12/15	Cattle

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat (continued)

Allotment Number	Allotment Name	Federal Acres	Type Management	# of Pastures	Season of Use	Type of Livestock
03001	Bennett Creek	3,038	Rest Rotation (Spring/Rest); Total Deferment	3	3/1-7/31; 9/1-2/28	Cattle
03002	Stonewall Creek	41	None	1	4/15-6/30; 10/1-2/28	Cattle/Horses/Bison
03003	Lower Slope	3,345	Rest Rotation (Spring/Fall/ Rest)	2	6/16-7/15; 9/1-11/5	Cattle
03004	Stonebridge	4,517	Rest Rotation (Spring/Fall/ Rest)	6	5/15-12/8	Cattle/Horses
03005	Natural Corral	189	Rest Rotation (Summer/Fall/Rest)	1	7/16-10/15	Cattle
03007	Bennett Creek	4,264	Total Deferment and Rest Rotation (Spring/Rest)	3	3/1-2/28	Cattle/Horses
03011	Heart Mountain North	4,393	Deferred Rotation (Spring/ Summer/Fall) and Rest Rotation (Spring/Fall/ Rest)	5	5/10-10/31	Cattle/Horses
03013	Billy Goat	76	Trailing use only Goat Pasture. None on river pasture.	1	6/1-11/25	Horses
03015	Dunn Creek	24	Total Deferment	2	10/1-10/31	Horses
03017	Eagle Valley	41	None	1	6/1-7/31	Cattle/Horses
03018	Rock Creek	68	Deferred Rotation (Spring-Fall/Fall)	1	4/15-10/28	Cattle
03019	TE Ranch	180	Deferred Rotation (Spring-Fall/Fall)	1	4/15/2/28	Cattle
03020	Post Creek	449	Total Deferment	1	8/13-12/30	Horses
03021	Spirit Basin	514	None	1	Non use	None
03023	Diamond Creek	474	Rest Rotation (Spring/ Summer/Rest)	2	4/1-2/28	Cattle/Horses
03024	Four Bear	570	Rest Rotation (1 year in 4 use)	1	11/10-12/10	Cattle/Horses
03025	Jim Creek	780	Rest Rotation (1 year in 4 use)	3	4/1-4/16	Cattle/Horses
03026	Hill	350	None	1	7/1-8/30	Cattle
03027	Bunn	876	Rest Rotation (Spring/Summer/Fall/ Rest)	1	5/1-6/14; 8/26-9/30	Cattle
03030	Diamond Basin	638	Rest Rotation (Spring/ Summer/Rest)	2	4/15-2/10	Cattle
03032	River Pasture	274	Rest Rotation (Spring/Fall/ Rest)	1	5/15-6/10	Cattle
03034	Spring Creek	362	None	1	5/15-10-30	Cattle

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat (continued)

Allotment Number	Allotment Name	Federal Acres	Type Management	# of Pastures	Season of Use	Type of Livestock
03036	Lakeshore	1,233	Deferred Rotation (Spring/ Summer-Fall or Summer-Fall)	2	8/1-11/2	Horses
03039	Palette	1,876	None	2	3/1-2/24	Cattle
03040	Lakeview	177	Rest Rotation (Spring/ Summer/Rest)	1	4/1-2/28	Cattle/Horses
03041	Twin Creek	187	None	1	5/1-11/15	Horses
03042	McCarty	77	None	1	4/15-2/27	Cattle
03043	Diamond Bar Ranch	747	Deferred Rotation (Spring-Fall/Fall)		5/15-12/25	Cattle
03044	Sheep Mountain	1,374	Rest Rotation (Spring/Rest)	2	5/15-7/30	Cattle
03046	Wall Creek	193	Deferred Rotation (Spring/Fall)	1	5/15-6/10	Cattle
03047	Timber Creek	1,340	Rest Rotation (Spring/Fall/ Rest)	1	4/1-12/24	Cattle
03048	Hoodoo Base	3,186	None		3/1-2/16	Cattle
03049	Haffey Place	432	Deferred Rotation (Spring/Fall)	1	4/1-10/31	Cattle
03050	Bull Creek	75	None; Non-use	3	6/1-6/30	Cattle
03051	Cottonwood Creek	1,269	Deferred Rotation (Spring and Summer/ Fall/Fall)	2	3/1-2/28	Cattle
03053	Trail Creek	5,836	None	14	3/1-2/28	Cattle
03054	Dorrance	297	Deferred Rotation (Spring/ Summer/Fall)	1	6/1-11/30	Cattle/Horses
03055	Red Pole	1,326	Total Deferment	3	4/14-6/15; 11/15-3/9	Horses
03056	Upton	96	None	1	Non use	None
03057	Ishawooa	14	Total Deferment	1	9/1-9/30	Horses
03058	Rand Creek	120	Rest Rotation (Spring/ Summer/Rest)	2	5/1-9/30	Horses
03059	Indian Pass	2,494	Deferred Rotation (Spring/ Summer/Fall)	2	5/15-9/30	Cattle
03060	Hidden Valley	1,667	Total Deferment	2	6/1-10/30	Horses
03066	Little Rock Creek	619	Early Spring and Fall	1	4/1-4/25; 9/1-11/15	Bison/Horses
03070	Rivers Rest	279	Deferred Rotation (Early Spring /Fall)	1	3/1-5/2; 9/1-10/25	Horses
03075	Hardpan Creek	242	Total Deferment	1	11/1-1/31	Horses
03076	Ll Bar	1,028	None	1	7/1-10/31	Cattle
03077	Southfork Wildlife	121	None	3	Non use	None

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat (continued)

Allotment Number	Allotment Name	Federal Acres	Type Management	# of Pastures	Season of Use	Type of Livestock
03078	Lake Creek	412	Total Deferment	1	10/1-12/6	Cattle
03080	Sunshine Reservoir	104	None	1	5/10-7/1	Cattle/Horses
03082	Castle Rock	650	Rest Rotation (Spring/ Summer/Fall/ Rest)	1	2/28-11/30	Horses
03083	Clarksfork Canyon	479	Rest Rotation (Spring/Fall/ Rest)	3	3/1-2/28	Cattle/Horses
03084	Big Dipper	1,668	Deferred Rotation (Spring/Fall)	2	5/15-6/15; 10/1-10/20	Cattle
03086	Chapman Bench	16,098	Rest Rotation (Spring/Rest)	2	4/25-7/1	Cattle
03083	Clarksfork Canyon	479	Rest Rotation (Spring/Fall/ Rest)	3	3/1-2/28	Cattle/Horses
03084	Big Dipper	1,668	Deferred Rotation (Spring/Fall)	2	5/15-6/15; 10/1-10/20	Cattle
03086	Chapman Bench	16,098	Rest Rotation (Spring/Rest)	2	4/25-7/1	Cattle
03087	State	4,009	Rest Rotation (Spring/ Summer/Fall/ Rest)	2	5/1-6/15; 7/29-10/1	Cattle
03089	Newmeyer Creek	1,247	Rest Rotation (Fall/Rest)	3	8/1-2/28	Cattle/Horses
03094	Dry Creek	2,166	Rest Rotation (Spring/Fall/ Rest)	1	4/20-6/30; 10/15-10-20	Cattle
03096	Meeteetse Rim	1,299	None	1	5/1-10/27	Cattle/Horses
03097	Isolated 40	40	None	1	7/1-7/31	Cattle/Horses
03098	Rawhide Pasture	1,299	Livestock Trailing	1	Trailing	Trailing
03099	Heart Mountain South	4,954	Rest Rotation (Spring/ Summer/Fall/ Rest)	4	5/1-10/31	Cattle
03100	Big Bend	752	Deferred Rotation (Early Spring/Winter)	7	11/15-4/30	Horses
03101	Devils Tooth	212	Rest Rotation (Spring/ Summer/Rest)	1	6/1-8/30	Cattle
03103	Simpson	8,635	Rest Rotation	33	4/25-6/30	Cattle
03105	Pasture # 4	19	Deferred Rotation (Summer/Fall)	1	9/1-9/30	Bison/Cattle
03106	Trout Creek	2,423	None	2	6/1-8/31	Horses
03107	Turnell	167	None	1	9/1-9/23	Cattle
03108	Rattlesnake Creek	2,816	Rest Rotation (Spring/Fall/ Rest)	9	4/16-6/30; 11/1-11/30	Cattle
03109	Southfork	23	Total Deferment	1	10/15-11/2	Horses
03111	Canyon Pasture	3,133	Rest Rotation (Spring/Rest); Total Deferment	2	3/1-7/31; 11/9-2/28	Cattle/Horses

Table A-1. Livestock Grazing Allotments within Grizzly Bear Habitat (continued)

Allotment Number	Allotment Name	Federal Acres	Type Management	# of Pastures	Season of Use	Type of Livestock
03116	Heart Mountain South	4,978	Deferred Rotation (Spring and Summer/ Winter/ Winter)	6	3/1-2/28	Cattle
03118	Rattlesnake Mountain	7,941	Deferred Rotation	1	7/1-10/31	Cattle
03120	Bennett Butte	15	None	1	9/1-9/30	Cattle
03121	Close Pasture	1,589	Rest Rotation (Spring/ Summer/Fall/ Rest)	1	5/1-7/8	Cattle

Final Biological Assessment for the Bighorn Basin RMP Revision
USFWS Comments
3/4/2015

Cmt #	Name	Page #	Line #	Comment	Comment Response

Final Biological Assessment for the Bighorn Basin RMP Revision
USFWS Comments
3/4/2015

Cmt #	Name	Page #	Line #	Comment	Comment Response

Final Biological Assessment for the Bighorn Basin RMP Revision
USFWS Comments
3/4/2015

Cmt #	Name	Page #	Line #	Comment	Comment Response