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Abbreviations

The following abbreviations are used in text bibliographic references or as adjectives:

APHIS	Animal and Plant Health Inspection Service, U.S. Department of Agriculture
BEA	Bureau of Economic Analysis, U.S. Department of Commerce
BLM	Bureau of Land Management, U.S. Department of the Interior
CEQ	Council on Environmental Quality
CFR	<i>Code of Federal Regulations</i>
CWD	chronic wasting disease
EIS	environmental impact statement
EO	Executive Order
FHWA	Federal Highway Administration
GnRH	gonadotropin releasing hormone (fertility control hormone)
GTNP	Grand Teton National Park
GYIBC	Greater Yellowstone Interagency Brucellosis Committee
JIHI	Jackson Interagency Habitat Initiative
NEPA	National Environmental Policy Act
NER	National Elk Refuge
NRO	Natural Resource Overlay zoning district (Jackson / Teton County)
NPS	National Park Service, U.S. Department of the Interior
NWRS	National Wildlife Refuge System
PL	Public Law
PZP	porcine zona pellucida (fertility control hormone)
RB51	brucellosis vaccine for bison
Stat.	<i>United States Statutes at Large</i>
USC	<i>United States Code</i>
USFWS	U.S. Fish and Wildlife Service, U.S. Department of the Interior
USFS	U.S. Forest Service, U.S. Department of Agriculture
WDEQ	Wyoming Department of Environmental Quality
WUI	Wildland Urban Interface (Grand Teton National Park)
WYDOT	Wyoming Department of Transportation
WGFC	Wyoming Game and Fish Commission
WGFD	Wyoming Game and Fish Department

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CHAPTER 1. INTRODUCTION



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PURPOSE AND NEED

This *Final Bison and Elk Management Plan and Environmental Impact Statement* identifies and evaluates six alternative approaches, including the preferred alternative, for managing bison and elk on the National Elk Refuge (refuge) and in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway (the park) for a 15-year period. It includes a discussion of the affected environment and an analysis of impacts under each alternative, as required by the National Environmental Policy Act (NEPA). The document is a result of a planning process begun by the U.S. Fish and Wildlife Service and the National Park Service in the spring of 2000. Each alternative consists of management goals, objectives, and strategies that were derived as a result of extensive public input into the significant issues being addressed in the plan.

The U.S. Fish and Wildlife Service and the National Park Service will issue a record of decision on the final preferred alternative no sooner than 30 days following the publication of the notice of availability of this *Final Plan and Environmental Impact Statement* in the *Federal Register*. After the record of decision has been signed, the final goals, objectives, and strategies will become the primary components of a stand-alone bison and elk

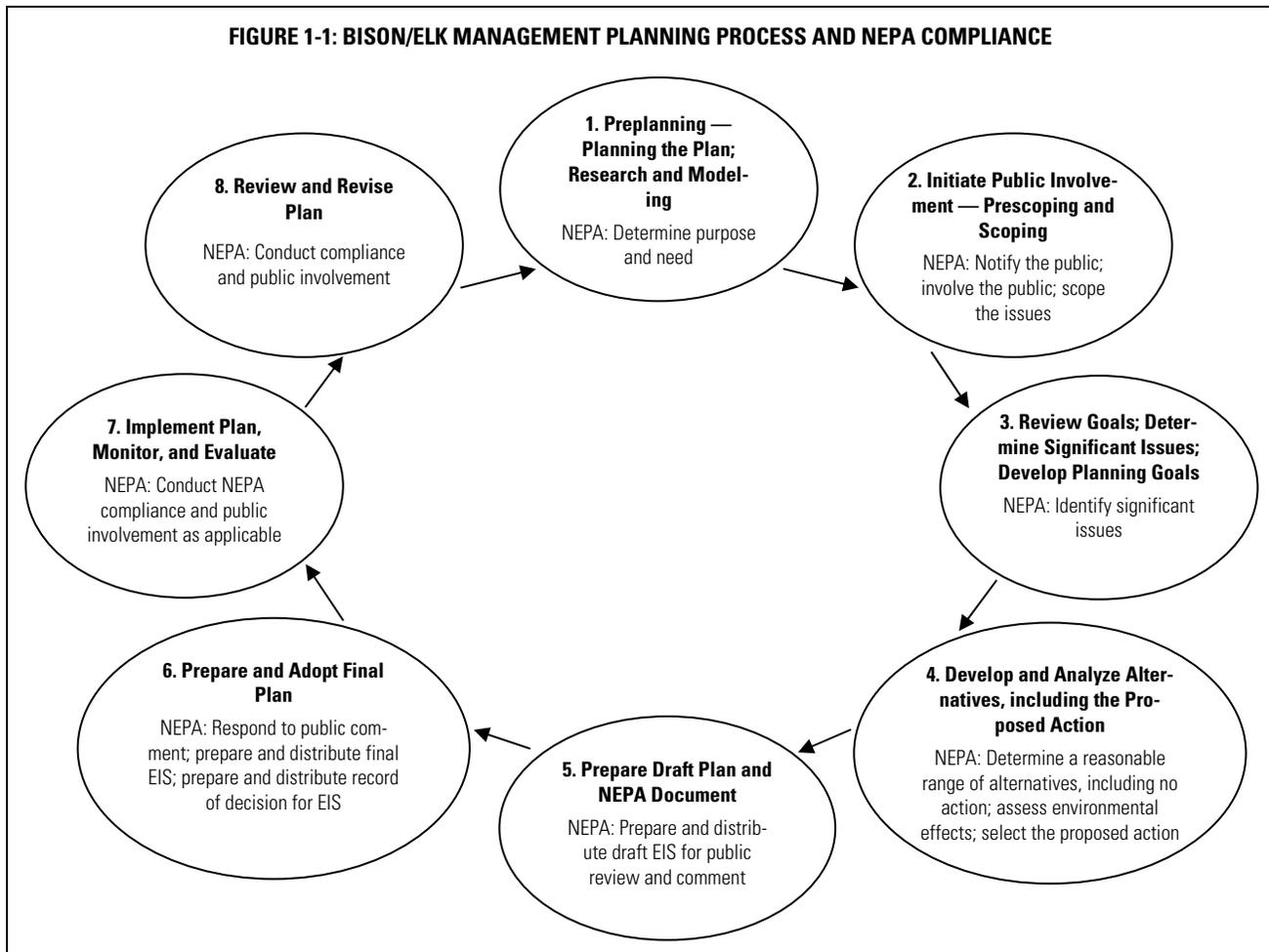
management plan to be implemented by the agencies. The process is illustrated in Figure 1-1.

The National Elk Refuge is a 24,700-acre unit of the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. Grand Teton National Park is 309,995 acres, and John D. Rockefeller, Jr., Memorial Parkway is an additional 23,777 acres, for a total of 333,772 acres administered by the National Park Service. The areas are just north of the town of Jackson in northwestern Wyoming and in the southern portion of the greater Yellowstone ecosystem (see the "Greater Yellowstone Area" map).

The Jackson elk and bison herds comprise one of the largest concentrations of elk and bison in North America, with an estimated 13,000 elk and about 1,000 bison. The elk migrate across several jurisdictional boundaries, including the National Elk Refuge, Grand Teton National Park, John D. Rockefeller, Jr., Memorial Parkway, Yellowstone National Park, Bridger-Teton National Forest, Bureau of Land Management (BLM) resource areas, and state and private lands. The bison range largely within Grand Teton National Park and the refuge, with some crossing into Bridger-Teton National Forest and onto state and private



Bison and elk on the National Elk Refuge.



lands in the Jackson Hole area. Because of their large numbers, wide distribution, effects on vegetation, and their importance to the area's predators and scavengers, both species contribute significantly to the ecology of the southern greater Yellowstone ecosystem. Elk are the priority species on the refuge because they are the only species specifically mentioned in the refuge's enabling legislation.

In preparing this final plan and environmental impact statement, the U.S. Fish and Wildlife Service and National Park Service worked closely with several cooperating agencies: the U.S. Forest Service and the Bureau of Land Management administer resource areas in the Jackson Hole area, and the U.S. Animal Plant Health Inspection Service is in part responsible for preventing the introduction and spread of significant livestock diseases. These agencies provided significant contributions in the development of this plan.

Additionally, the Wyoming Game and Fish Department (WGFD) manages resident wildlife species throughout most of Wyoming and was a significant partner in this planning process. In Wyoming, wildlife management goals and objectives (e.g., bull-to-cow ratios, herd objectives, and hunting seasons) are set through a public review process that requires public input and a final recommendation to be approved by the Wyoming Game and Fish Commission. Further information about the state's role in this planning process is discussed in greater detail in this chapter under "State Plans and Agreements."

Extensive opportunities were also provided to local governing bodies and agencies, tribal governments and organizations, nongovernmental organizations, and private citizens to provide input into the management planning process.

Greater Yellowstone Area

BACKGROUND

THE ROLE OF ELK

While Jackson Hole is probably best known for the splendor and ruggedness of the Teton Range, the Jackson elk herd certainly ranks among the top characterizing features of the valley. Elk figure prominently in Jackson Hole's history and culture. In the late 1800s, when elk populations all over North America were being extirpated, the residents of Jackson Hole diligently protected elk from "tusk hunters" and from large-scale commercial hunting operations. Elk are just as important to today's residents of the valley. Many people who have visited the town of Jackson remember it for the four arches made of elk antlers in the town square. Many local businesses include "elk" or "antler" in their names, and elk and elk antlers figure prominently in many of the items for sale and on display in town. Thousands of people each year have the opportunity to see elk at close range on the refuge while riding on horse-drawn sleighs. Thousands of pounds of shed elk antlers are sold at an annual antler auction each spring in the town square. Elk are important to backcountry users as well as to people that never leave the road. Jackson Hole is a popular destination for in-state and out-of-state elk hunters.

Winter feeding of elk in Jackson Hole began in 1910 and was originally initiated to reduce winter mortality of elk, thereby helping preserve a population of animals important to local residents and interest groups, as well as to minimize depredation of ranchers' hay. Although these immediate factors prompted the initiation of winter feeding,



Historical photo of elk on the refuge.

the need for the refuge's winter feeding program is a direct result of reduced access to significant parts of elk native winter range. According to some anecdotal historical reports, before Euro-American settlement, elk that summered in the area now inhabited by the Jackson elk herd wintered to some degree in the southern portion of Jackson Hole (present location of the National Elk Refuge and the town of Jackson) and could have used areas outside Jackson Hole, including the Green River and Wind River basins to the south and east, respectively, and the Snake River basin to the southwest in what is now eastern Idaho (Allred 1950; Anderson 1958; Blair 1987; Barnes 1912; Sheldon 1927). Migration to these wintering areas probably varied from year to year, but the historical accounts of anecdotal observations are not sufficiently detailed to delineate the specific routes and movement patterns or whether migration, in fact, occurred. Changes in land use and development in the upper and middle valleys of the Snake, Green, and Wind rivers, settlement and hay production in Jackson Hole, and over hunting reduced or eliminated the use of these areas by elk.

While not everyone agrees that elk migrations took place (G. F. Cole 1969; Boyce 1989), what is known for certain is that by the end of the 19th century the Jackson elk herd was largely confined to Jackson Hole and the immediately surrounding area. As a result, the herd was at the mercy of sometimes severe winter weather, with subzero temperatures, snow accumulation, and other factors contributing to a harsh wintering environment. Compounded by the loss of available winter range in Jackson Hole due to ranching operations and a growing town, significant numbers of elk died during several severe winters in the late 1800s and early 1900s (prior to 1911). This prompted local citizens and organizations, as well as state and federal officials in Jackson Hole, to begin feeding elk in the winter of 1910–11. Congress heeded the appeals for assistance and on August 10, 1912, appropriated \$45,000 for the purchase of lands and maintenance of a "winter game (elk) reserve" (37 Stat. 293). The first winter census in the area was conducted in 1912 and showed about 20,000 elk residing in Jackson Hole and the Hoback River drainage.

THE ROLE OF BISON

Bison are also popular with visitors and residents and were fairly recently reestablished in Jackson Hole after being extirpated in the mid-1800s. To many people, bison are a symbol of the West. Because there are so few opportunities to see bison in the wild, viewing and photographing them in Grand Teton National Park is a unique opportunity for many of the valley's visitors, especially with the Teton Range in the background. As with elk, bison figure prominently in items for sale and on display in the town of Jackson. There is a high level of interest in bison hunting; there are far more applicants for hunting licenses than what are available. Bison are of particular interest to nearby American Indian tribes and tribes in other parts of the United States because the animals are central to their culture and tradition.

Historically bison inhabited Jackson Hole, as evidenced by the presence of prehistoric bison remains. These animals were extirpated outside Yellowstone National Park by the mid-1880s. In 1948, 20 bison from Yellowstone National Park were reintroduced to the 1,500-acre Jackson Hole Wildlife Park near Moran. A population of 15–30 bison was maintained in a large enclosure there until 1963, when brucellosis was discovered in the herd. All the adult animals were destroyed, but four vaccinated yearlings and five vaccinated calves were retained. Twelve certified brucellosis-free bison were added soon afterward. In 1968 the herd (down to 11 animals) escaped from the confines of the wildlife park, and a year later the decision was made to allow them to range freely. In 1975 the small Jackson bison herd (then 18 animals) began wintering on the National Elk Refuge. The use of standing forage by bison on this winter range was viewed as natural behavior and was not discouraged by managers. In 1980, however, the bison began eating supplemental feed being provided for elk, and they have continued to do so every winter since.

The discovery of supplemental feed by bison has had several consequences, including a decline in winter mortality and an increase in the population's growth rate. The Jackson bison herd has grown to approximately 1,000 animals and since 1990 has on average increased about 10% to 14% each year, despite WGF D-managed efforts to harvest bison outside the refuge and the park



Bison in snow.

since 1997. This means that, without additional harvest, the herd would double about every six to eight years. Bison on the elk feedlines have at times disrupted feeding operations and displaced and injured elk. To minimize conflicts between bison and elk, managers have provided separate feedlines for bison since 1984. As the population has grown, separating elk and bison on feedlines has become increasingly difficult, and the bison are now fed more than a maintenance ration to reduce displacement of elk from feedlines. It is not clear how large the population could become in the absence of human control measures.

The bison herd now represents a substantive presence in Jackson Hole. Many of the management issues surrounding the herd are controversial, and a wide range of opinions have been expressed by various interest groups about how the herd should be managed. Because of its distribution, the herd falls under the land management jurisdictions of Grand Teton National Park, the National Elk Refuge, and Bridger-Teton National Forest, as well as private landowners. The herd is under the wildlife management jurisdictions of the park, the refuge, and the Wyoming Game and Fish Department. In addition, the Wyoming Livestock Board has authority to remove bison from some public and private lands if there are conflicts with landowners. Concerns voiced about the rapidly increasing bison herd include increased damage to habitats, competition with elk, risk of disease transmission to elk and domestic livestock, risk to human safety, damage to private property, and costs of providing supplemental feed for bison.

PURPOSE OF AND NEED FOR ACTION

PURPOSE OF THE PLAN

The purpose of this bison and elk management plan and environmental impact statement is to analyze various options for managing the Jackson bison and elk herds for the next 15 years. Once a preferred alternative has been selected and documented in a record of decision, the final stand-alone plan will provide managers with goals, objectives, and strategies for managing bison and elk on the National Elk Refuge and in Grand Teton National Park, in support of the purposes for which the two areas were established, and to contribute to the missions and management policies of the U.S. Fish and Wildlife Service and the National Park Service. Given the substantial contributions that the refuge and the park make to the Jackson bison and elk herds and the effects that the herds can have on surrounding habitats, the plan will also contribute to the herd objectives set by the Wyoming Game and Fish Department, as well as to several goals and objectives set by the U.S. Forest Service related to elk, bison, and their habitat in Bridger-Teton National Forest.

NEED FOR ACTION

The identification of current issues does not discount the highly successful past and present efforts to conserve elk and bison in Jackson Hole and, in fact, may ensure that management actions remain successful. The success of the program is due in large part to issues being identified and resolved over the long history of the refuge and park, a process that is and should be ongoing.

This planning effort involves the consideration of changes in how the elk and bison herds are currently managed on the National Elk Refuge and in Grand Teton National Park in order to meet legal obligations, to address problems related to high animal concentrations and effects on habitat, and to take advantage of unmet opportunities. The need for action comes from many directions, and the following discussion treats each of these in some detail.

1998 Lawsuit to Stop Bison Hunting

In 1996 a *Jackson Bison Herd Long-term Management Plan and Environmental Assessment*

was completed by the National Park Service and the U.S. Fish and Wildlife Service, with the Wyoming Game and Fish Department and the U.S. Forest Service participating as cooperating agencies. According to the *Environmental Assessment*, action was needed to address the rapidly growing bison population and the artificial concentration of bison during the winter. The growing bison population and its distribution were of concern because of the increased risk of disease transmission, competition with elk and other wildlife, property damage, erosion, and overgrazing (NPS and USFWS 1996). The selected alternative called for public hunting on the refuge and in Bridger-Teton National Forest to control the size of the herd.

Before the plan was implemented, in 1998 the Fund for Animals successfully sued to prevent the implementation of any “destructive management” of bison for population control on the National Elk Refuge until additional NEPA analysis had been conducted on the effects of the refuge’s winter feeding program on the bison population (*Fund for Animals v. Clark*, Civ. No. 98-2355 RMU, D.D.C.). The U.S. District Court for the District of Columbia enjoined the culling of bison for population control purposes until the agencies completed additional NEPA compliance. The court also noted that the refuge’s winter feeding program for elk lacked a needed environmental analysis under the National Environmental Policy Act.

Following the lawsuit, the U.S. Fish and Wildlife Service and the National Park Service decided to broaden the management planning process to include all aspects of elk management (in addition to bison management) for several reasons:

- The Fish and Wildlife Service was scheduled to begin developing a comprehensive conservation plan for the National Elk Refuge, as required by the National Wildlife Refuge Improvement Act of 1997, and elk management would be a significant aspect of that plan. A decision was made to prepare a joint management plan between the U.S. Fish and Wildlife Service and the National Park Service to address the immediate concerns of bison and elk management on the National Elk Refuge and in Grand Teton National Park and then to prepare the comprehensive conservation plan for the refuge after the bison



Poor condition cottonwood habitat.

and elk management plan was completed. By conducting an analysis of the winter feeding program and all of the associated impacts in managing elk on the refuge during this planning process, a foundation would be provided for the subsequent development of the refuge's comprehensive plan.

- Conducting separate planning processes for the winter feeding of elk and bison would cause needless confusion to the public.

Issues Related to Ungulate Concentrations

The need for bison and elk management planning is also driven by current limitations on the ability of the U.S. Fish and Wildlife Service and the National Park Service to achieve refuge and park purposes, agency missions, and related legal responsibilities. While there have been many benefits associated with wintering large numbers of elk and bison on the refuge, high concentrations of these animals have created an unnatural situation that has contributed to the following:

- an increased risk of potentially major outbreaks of exotic diseases
- damage to and loss of habitat due to browsing of willow, cottonwood, and aspen stands, with resultant reductions in wildlife associated with healthy stands
- unusually low winter mortality of bison and elk, which affects predators, scavengers, and detritivores
- a high level of brucellosis in the elk and bison herds

Of all the challenges related to bison and elk management on the refuge and in the park, the increased risk of possibly serious disease impacts and habitat damage have the greatest potential to hinder the ability of both the U.S. Fish and Wildlife Service and the National Park Service to meet their purposes and missions as they relate to the National Elk Refuge, Grand Teton National Park, and John D. Rockefeller, Jr., Memorial Parkway. Even though bovine tuberculosis and chronic wasting disease, two of the more pronounced future risks, have not been documented in the Jackson herds, the distribution of chronic wasting disease continues to expand in the western United States, and tuberculosis would be a threat to the herds if it was introduced. Each disease is believed to be spread through contact with infected animals or contaminated environments. The introduction of either disease or other non-endemic diseases into ungulate populations inhabiting the refuge or the park could have major adverse consequences, given the crowded conditions on the refuge during winter feeding operations. Also, brucellosis is a concern to the State of Wyoming and the livestock industry.

A considerable amount of research and monitoring has indicated that the large, annual concentration of elk over the last 90 years is a major contributor to habitat alteration. Habitat loss is one concern for the National Elk Refuge because since 1921 one of the major purposes of the refuge has been to provide a "refuge and breeding ground" for birds. Willow, cottonwood, and aspen are key habitats for native birds. Grand Teton National Park has also experienced some damage to aspen habitats due in part to the large elk population, and there is concern that some aspen stands may be lost in the future.

The U.S. Fish and Wildlife Service and the National Park Service also desire to ensure that any actions to reduce or otherwise control elk numbers on the refuge would not measurably affect elk numbers in the Yellowstone National Park and Teton Wilderness segments of the Jackson elk herd. At present, the Grand Teton herd segment comprises a large proportion of the elk that winter on the National Elk Refuge. At the same time, it is more difficult to regulate the Grand Teton segment through hunting than it is to regulate other herd segments, and this has at times resulted in higher hunting pressure on herd seg-

ments outside the park. Because the winter feeding program on the refuge results in minimal mortality, it necessitates an elk reduction program in the park in order to help meet state objectives for the Jackson elk herd.

The high concentrations of bison and elk have contributed to the prevalence of brucellosis in the herds. The risk of transmitting brucellosis from bison and elk to livestock is a significant issue for the livestock industry, the State of Wyoming, and other western states. Wyoming lost its brucellosis class-free status in 2004, which was a considerable concern to the state and the livestock industry. The state regained class-free status in September 2006 after complying with testing and surveillance requirements. As a member of the Greater Yellowstone Interagency Brucellosis Committee, the U.S. Department of the Interior has committed to work toward achieving the goal of protecting the public interests and economic viability of the livestock industry in Idaho, Wyoming, and Montana while at the same time protecting and sustaining the existing free-ranging elk and bison populations in the Greater Yellowstone Area (Wyoming et al. 1995; NPS 2000a).

Supplemental Winter Feeding as a Response to Insufficient Winter Range

All of the biological issues identified above stem from the winter feeding program on the National Elk Refuge. Winter feeding of elk began just prior to the refuge being established in 1912 (USFWS 1999b). Feeding was started to mitigate the conversion of former winter range to other land uses. Winter feeding reduced winter mortality and kept elk numbers high, while at the same time reducing elk depredation of haystacks and livestock pastures in Jackson Hole.

The need for winter feeding remains much the same as it was in 1912 — to address the fact that there is an insufficient amount of winter range to support the numbers of elk that have existed in Jackson Hole since the early 1900s (USFWS 1999b). Supplemental feeding has also contributed to an expanding bison population, adding to the overall problem.

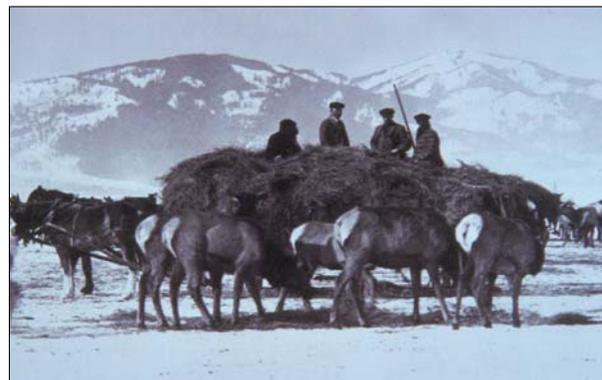
Another factor that must be considered in the plan is the desire to design alternatives that do not markedly impact the Wyoming Game and Fish

Department's ability to annually meet their Jackson elk herd objective, while at the same time meeting legal requirements imposed on the U.S. Fish and Wildlife Service and the National Park Service.

Recognizing (1) the large proportion of elk that overwinter on the National Elk Refuge (roughly half of the population in recent years), (2) the importance of the Jackson elk herd and the desire to avoid marked changes in the numbers of elk sustained in the Jackson herd unit (to the extent possible), and (3) the requirement to evaluate alternatives to winter feeding, the range of alternatives must include other means of overwintering a large portion of the Jackson elk herd, as well as addressing elk management in the context of the entire herd. Also, because winter feeding has such a large effect on the park elk and bison herds, alternatives to the current winter feeding program must be developed in consideration of the park's purposes, as well as the National Park Service's mission and wildlife conservation policies.

DECISION TO BE MADE AND CRITERIA FOR DECISION-MAKING

The decision to be made by the Regional Directors of the U.S. Fish and Wildlife Service and the National Park Service, in cooperation with the U.S. Forest Service, the Bureau of Land Management, the Animal and Plant Health Inspection Service, and the Wyoming Game and Fish Department, is the selection of a preferred alternative to implement as the bison and elk management plan for the National Elk Refuge and Grand Teton National Park. The decision will be based primarily on legal responsibilities of the two agencies with respect to bison and elk conservation



Elk feeding effort in the early 1900s.

and management in their units, which includes consistency with wildlife management principles and scientific information. In addition, WGFD herd objectives will be considered, as well as public, tribal, and stakeholder input on the *Draft Environmental Impact Statement*. The decision makers must also consider factors such as land uses in the surrounding area and other parts of the ecosystem, effects of alternatives on the ability of other agencies to accomplish their missions, general trust responsibilities to the American Indian tribes, and future budgets. The decision will be documented in the Record of Decision, to be summarized in the *Federal Register*, no sooner than 30 days after a final environmental impact statement is filed with the Environmental Protection Agency and distributed to the public. Implementation of the plan will begin immediately on publishing a summary of the record of decision in the *Federal Register*.

DECISION CRITERIA FOR THE NATIONAL ELK REFUGE

Within this broad decision-making framework, the decision with regard to the National Elk Refuge will be guided by the following criteria, which are prioritized based on legal responsibilities contained in the purposes of the refuge, the mission of the National Wildlife Refuge System, and other legal and policy mandates:

1. The alternative that best protects National Elk Refuge lands to provide for the long-term protection of elk winter habitat (e.g., protection from conversion to incompatible land uses).
2. The alternative that best provides suitable winter grazing habitat and sanctuary for elk.
3. The alternative that also allows for suitable breeding habitat and sanctuary for native birds, grazing habitat and sanctuary for other big game (including bison), and habitat for threatened or endangered species and other wildlife to be sustained, and that provides for the protection of natural resources in general.
4. The alternative that otherwise contributes to sustainable, healthy populations of elk and bison (beyond the provisions of 1–3 above) and allows for healthy populations of other species to be sustained, recognizing that whenever there is a conflict between the pro-

tection of endangered or threatened species and the management of other wildlife, the conflict must be resolved in favor of endangered or threatened species.

5. The alternative that allows biotic integrity, diversity, and environmental health to be restored and sustained.
6. The alternative that provides opportunities for compatible wildlife-dependent recreation.
7. The alternative that best contributes to the WGFD elk and bison herd objectives.
8. The alternative that balances the issues identified by the public, American Indian tribes, and other stakeholder groups involved in the process.

DECISION CRITERIA FOR GRAND TETON NATIONAL PARK

The decision with respect to Grand Teton National Park will be guided by the following decision-making elements:

1. The alternative that best meets the park mission, including establishing purposes and significance of the park, and management prescriptions, as outlined in the *NPS Management Policies 2006* (NPS 2006, sec. 2.2).
2. The alternative that best meets other legal provisions and policies regarding the conservation and management of elk and bison, especially (a) the restoration and maintenance of habitat and population characteristics that reflect natural conditions, including natural fluctuations; and (b) the requirement that management activities and public use do not impair park resources.
3. The alternative that addresses other park uses and other issues identified by the public, American Indian tribes, and other stakeholder groups involved in the process.

FACTORS CONSIDERED IN DEVELOPING THE PLAN

Many factors were considered in formulating management goals and alternative sets of objectives and strategies to address the purpose of and need for action.

LEGAL DIRECTIVES

As federal agencies, the U.S. Fish and Wildlife Service and the National Park Service operate under a set of laws and policies that direct, guide, and limit the actions they are able to take. Legal directives refer to provisions of laws, executive orders, policies, and regulations that require managers to proceed in a certain direction or to achieve certain targets or end products.

The U.S. Fish and Wildlife Service is the primary federal agency responsible for conserving and enhancing the nation's fish and wildlife populations and their habitats. Although the Fish and Wildlife Service shares this responsibility with other federal, state, tribal, local, and private entities, it has specific trust responsibilities for migratory birds, threatened and endangered species, and certain anadromous fish and marine mammals. The Fish and Wildlife Service also has similar trust responsibilities for the land and waters it administers to support the conservation and enhancement of fish and wildlife. The Fish and Wildlife Service is required to manage the National Elk Refuge to meet refuge purposes and to contribute to the agency's mission-related mandates.

Similarly, the National Park Service must manage Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway in accordance with the NPS Organic Act and the establishing legislation for the parks.

It is critical that the goals and objectives adopted in this process reflect legal directives because if they do not, then resulting management actions will not be consistent with the directives. Likewise, if the scope of goals and objectives is expanded to address issues that are beyond the scope of the established purposes and missions, then management actions could proceed in a different direction than that identified in the legal directives.

Trust Resources and Native American Indian Policies

The United States government has a unique legal relationship with federally recognized American Indian tribes, based on the recognition of the inherent powers of tribal sovereignty and self-government. The U.S. Fish and Wildlife Service

and the National Park Service are committed to upholding this special relationship and implementing its activities in a manner consistent with it.

The United States government has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statutes, and executive orders. The U.S. Fish and Wildlife Service and the National Park Service share in this responsibility. The U.S. Fish and Wildlife Service is also guided by its "Native American Policy" (USFWS 1994a). A list of laws, policies, and treaties affecting cultural resources and American Indians that pertain to this plan can be found in Appendix A.

National Elk Refuge

National Wildlife Refuge System Mission and Related Directives

Like all other national wildlife refuges, the National Elk Refuge is governed by the National Wildlife Refuge System Administration Act of 1966, as amended (16 USC 668dd et seq.). The act formally defines the mission of the Refuge System as the administration of a

national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (16 USC 668dd(a)(2)).

In passing the act, Congress clarified that the *fundamental* mission of the Refuge System is the conservation of fish, wildlife, and plants (House of Representatives Report 105-106, sec. 5), where conservation is defined as sustaining healthy populations of these organisms (16 USC 668ee(4)). Characteristics of a healthy wildlife population include a stable and continuing population (i.e., the population returns to an initial equilibrium after being disturbed) and a minimized likelihood of irreversible or long-term effects (50 CFR 100.4). USFWS policy echoes this emphasis, noting that "wildlife conservation is the singular National Wildlife Refuge System mission" (601 FW 3.7a).

Other requirements of the Refuge System Administration Act are to (1) ensure that the biologi-



Pronghorn on the National Elk Refuge.

cal integrity, diversity, and environmental health of the Refuge System are maintained; (2) recognize that wildlife-dependent recreational uses, such as hunting and wildlife viewing, are legitimate and appropriate public uses of the Refuge System when these uses are compatible with the Refuge System mission and refuge purposes; (3) provide opportunities for compatible wildlife-dependent recreation within the Refuge System; and (4) coordinate the development of plans with relevant state conservation plans for wildlife.

Refuge Purposes

The National Elk Refuge was established in 1912 as a “winter game (elk) reserve” (37 Stat. 293, 16 USC 673), and the following year Congress designated the area as “a winter elk refuge” (37 Stat. 847). In 1921 all lands included in the refuge or that might be added in the future were reserved and set apart as “refuges and breeding grounds for birds” (Executive Order [EO] 3596), which was affirmed in 1922 (EO 3741). In 1927 the refuge was expanded to provide “for the grazing of, and as a refuge for, American elk and other big game animals” (44 Stat. 1246, 16 USC 673a). These purposes apply to all or most of the lands now within the refuge. Several parcels have been added to the refuge specifically for the conservation of fish and wildlife (Fish and Wildlife Act of 1956), and for opportunities for wildlife-oriented recreational development oriented to fish and wildlife, the protection of natural resources, and the conservation of threatened or endangered species (Refuge Recreation Act of 1962, 16 USC 460k-1).

USFWS Management Policies

The U.S. Fish and Wildlife Service has other policies that govern or otherwise influence elk and bison management on the National Elk Refuge. Those that pertain directly to some of the key issues being addressed in this planning process are discussed below.

USFWS policy directs that wildlife population levels on refuges be maintained at levels consistent with sound wildlife management principles (701 FW 1.3), that populations be managed for natural densities and levels of variation, while ensuring that densities of endangered or otherwise rare species are sufficient for maintaining viable populations (601 FW 3.14.C), and that population management activities contribute to the widest possible natural diversity of indigenous fish and wildlife, even when population management activities are implemented for a single species (701 FW 1.3). Managing for natural densities of elk may be done in a landscape context. In the context of contributing to natural population levels, it is permissible to “compromise elements of biological integrity, diversity, and environmental health at the refuge scale in support of the same components at larger landscape scales,” if this is done in pursuit of refuge purposes (601 FW 3.7.C). At present, the wintering of unnaturally high densities of elk on the refuge helps sustain a more natural population level at the larger landscape level by mitigating the loss of winter range.

However, USFWS policy also requires that wildlife densities do not reach excessive levels that would result in adverse effects on habitat and other wildlife species, including increased disease risks (601 FW 3.14.E). Any resulting irreversible or long-term adverse impacts would conflict with the Refuge System Administration Act (16 USC 668dd(a)(2) and 668ee(4)), as well as with USFWS policy (601 FW 3.14.E, 701 FW 1.3, 7 RM 7.2.A). In essence, high elk and bison densities are not permitted to reach levels that would compromise other refuge purposes (16 USC 668dd(a)(3)(A) and (4)(D)). These mandates mean that a balance must be struck, whereby all refuge purposes are to be met to a reasonable degree, taking into account their priority ordering.

Other USFWS Legal Policy Constraints

Lands within the National Wildlife Refuge System are different from other federal lands because they are closed to all public uses unless specifically and legally opened. Refuge uses, including recreational and economic activities, are not allowed unless a compatibility determination is made and the refuge manager determines that the use will not materially interfere with or detract from the fulfillment of the mission of the National Wildlife Refuge System or the purposes of the refuge. Refuge management activities by the Fish and Wildlife Service, such as prescribed fire, scientific monitoring, and facility maintenance, are not subject to compatibility determinations. Compatibility determinations are also not required for state wildlife management activities on a national wildlife refuge pursuant to a cooperative agreement where the refuge manager has made a written determination that such activities support fulfilling the refuge purposes or the system mission (USFWS 2000c).

After compatibility determinations are written, they are signed and dated by the refuge manager, with concurrence by the regional chief of the National Wildlife Refuge System, stating that a proposed use or existing use of a national wildlife refuge is or is not a compatible use. Compatibility determinations are typically completed as part of the comprehensive conservation plan process. Because the bison and elk management plan is being completed prior to the start of the comprehensive plan, two compatibility determinations (relating to elk and bison hunting) are included in the appendix for this document. Draft compatibility determinations on the proposed action (Alternative 4) were published in the *Draft Bison and Elk Management Plan and Environmental Impact Statement*. Following public comment, the compatibility determinations were modified and finalized where appropriate; they are included as appendixes to this document. Once a final compatibility determination is made by the refuge manager, with the regional chief's concurrence, it is not subject to administrative appeal.

As mentioned previously, after the completion of the bison and elk management plan, the U.S. Fish and Wildlife Service expects to begin developing a comprehensive conservation plan for the National Elk Refuge. This is a 15-year plan that describes

the desired future conditions of the refuge and provides long-range guidance and management direction for all programs on the refuge. The bison and elk management plan will be incorporated as part of the comprehensive conservation plan. The U.S. Fish and Wildlife Service also prepares additional plans, called step-down management plans, that are more detailed and are related to specific topics such as fire management, hunting, and public use. Step-down plans are developed as the need arises and require further compliance with USFWS planning policies and procedures, including opportunities for public review and comment. One of the first step-down plans likely to be completed following this process is a detailed plan that addresses chronic wasting disease management on the National Elk Refuge.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway***Implementing Legislation for the National Park Service***

The National Park Service receives its basic mandate from the NPS Organic Act (16 USC 1, 2–4) and the General Authorities Act of 1970, as amended (16 USC 1a-1 through 1a-7):

The Service thus established shall promote and regulate the use of the Federal areas known as National Parks . . . by such means and measures as to conform to the fundamental purposes of the said Parks . . . which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 USC 1).

The 1978 amendments to the General Authorities Act affirm the basic tenets of the Organic Act and provide additional guidance for National Park System management:

The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established (16 USC 1a-1).

According to *NPS Management Policies 2006*, management decisions for National Park System units are based primarily on the park's mission, mission goals, and management prescriptions (NPS 2006, sec. 2.2, 2.3.1.2).

Park Purposes and Mission

Grand Teton National Park was originally established in 1929 when Congress set aside approximately 150 square miles of the Teton Range (45 Stat. 1314). In 1943 Jackson Hole National Monument was established by presidential proclamation, thus placing additional lands under federal protection (Proc. No. 2578, 57 Stat. 731). In 1950 Public Law (PL) 81-787 combined the original park and the monument into a new Grand Teton National Park. Section 6 of the law required the Wyoming Game and Fish Commission (WGFC) and the National Park Service to develop a program for the permanent conservation of elk within the park, and it further required the approval for such a program by both the Secretary of the Interior and the Governor of Wyoming (PL 81-787, 16 USC 673c). As set out in the law, hunters participating in the controlled reduction of elk (when necessary for proper management) are licensed by the state and deputized as park rangers.

Section 5 of PL 81-787 authorized the continuation of livestock grazing permits that existed prior to September 14, 1950 (16 USC 406d-2). Additional details on livestock grazing legislation and agreements are provided in the "Existing Plans and Agreements" section below.



Sagebrush shrubland on the National Elk Refuge.

Grand Teton National Park is dedicated to the preservation and protection of the Teton Range and its surrounding landscapes, ecosystems, and cultural and historic resources. The singular geologic setting makes the area and its features unique on our planet. Human interaction with the landscape and ecosystem has resulted in an area that is rich in natural, cultural, and historic resources and that represents the natural processes of the Rocky Mountains and the cultures of the American West.

The purpose of Grand Teton National Park is to protect the area's native plant and animal life, its cultural and historic resources, and its spectacular scenic values, as characterized by the geologic features of the Teton Range and Jackson Hole (NPS 2005c).

John D. Rockefeller, Jr., Memorial Parkway was established on August 25, 1972, for the purpose of commemorating "the many significant contributions to the cause of conservation . . . made by John D. Rockefeller, Jr., and to provide both a symbolic and desirable physical connection between the world's first national park, Yellowstone, and the Grand Teton National Park" (PL 92-404). Hunting and fishing are permitted in accordance with applicable state and federal laws in the part of the parkway that was administered by the U.S. Forest Service prior to its inclusion in the National Park System. However, the Secretary of the Interior may designate zones where, and periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment.

The purpose of John D. Rockefeller, Jr., Memorial Parkway is to conserve the scenery and natural and historic resources and to provide for their use while leaving them unimpaired for future generations (NPS 2005c).

NPS Management Policies

Current policy guidance for the National Park Service is provided in the *NPS Management Policies 2006* (NPS 2006). The policies interpret the laws, regulations, and executive orders governing the National Park System.

The *NPS Management Policies 2006* reaffirm that the fundamental purpose of the National Park

System is the conservation of park resources and values (NPS 2006, sec. 1.4.3). Park managers are also to provide for the enjoyment of resources and values by the public, and they retain the discretion to allow impacts when needed to fulfill this or other requirements of a park, so long as the impact does not constitute impairment (sec 1.4.4).

An overriding policy of the National Park Service is to preserve the natural resources, processes, systems, and values of units of the National Park System in an unimpaired condition, to perpetuate their inherent integrity, and to provide present and future generations with the opportunity to enjoy them. In so doing, the Park Service strives to “understand, maintain, restore, and protect the inherent integrity of the natural resources, processes, systems, and values of the parks” (NPS 2006, sec. 4.0). The Park Service is required to return human-disturbed areas to the natural conditions and processes characteristic of the ecological zone in which the damaged resources are situated (sec. 4.1.5).

The policies also indicate that under normal circumstances, the focus of natural resource conservation in parks will be at an ecosystem level, emphasizing natural abundance, diversity, and genetic and ecological integrity of native species in an ecosystem. Except for an endangered or threatened species, the Park Service will not attempt to preserve individual species or individual natural processes (NPS 2006, sec. 4.1). Normally, the Park Service will not intervene in natural biological or physical processes. A relevant exception to this policy is when an ecosystem’s functioning has been disrupted by human activities or when park-specific legislation authorizes particular activities, for example, livestock grazing and elk herd reductions in Grand Teton National Park.

For species that migrate into and out of national parks, such as the elk and bison in Grand Teton, the National Park Service is to adopt resource preservation and use strategies designed to maintain natural population fluctuations and processes that influence the dynamics of these wildlife populations (NPS 2006, sec. 4.4.1.1). For these migratory populations, national parks provide only one of several major habitats they need, and survival of the species in national parks also depends on the existence and quality of habitats outside the parks. Thus, the Park Service must work with

other land managers to encourage the conservation of the populations and habitats of these species outside parks whenever possible. The Park Service is required to protect natural resources from impacts caused by external activities by working cooperatively with federal, state, and local agencies; American Indian authorities; user groups; adjacent landowners; and others to identify and achieve broad natural resource goals.

NPS Legal and Policy Constraints

The National Park Service must ensure that strategies and actions do not impair biological, cultural, and historical resources and values within Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway. Ultimately, it is the Secretary of the Interior’s absolute duty, which is not to be compromised, to take whatever actions may be necessary to ensure that park resources are not impaired (NPS 2006, sec. 1.4.2). Thus, actions being considered for the National Elk Refuge that could potentially impair the resources of Grand Teton National Park, the parkway, or Yellowstone National Park must also be evaluated relative to impairment requirements.

In considering the restoration of previously farmed areas in Grand Teton National Park, the National Park Service can only consider the use of native plant species (whereas the U.S. Fish and Wildlife Service can consider the use of nonnative species on the National Elk Refuge).

FUNDING

Funding is a major consideration in developing management alternatives. Management activities and projects in the selected alternative would be implemented as funds became available. While funding for elk and bison conservation on the National Elk Refuge and in Grand Teton National Park could increase, it is unlikely that short or long-term funding would increase dramatically. The cost to implement each alternative is projected based on anticipated staff and project costs. The projected funding levels required to implement each alternative for a 15-year period are the best estimates, considering normal circumstances, and they are based on assumptions outlined in the alternatives with respect to the state-of-the-art technology. This document does not constitute a

commitment for funding, and future budgets could influence implementation priorities.

WILDLIFE MANAGEMENT PRINCIPLES AND SCIENTIFIC INFORMATION

Wildlife management principles and scientific information are critical in the development of goals, objectives, and strategies for managing wildlife. The U.S. Fish and Wildlife Service is required to base management decisions on sound principles of wildlife management and available scientific information (USFWS 2000b, sec. 602 FW 1.3). The service must “use planning and sound professional judgment to determine prudent limits to densities” (USFWS 2001, sec. 601 FW 3.14.E). Sound professional judgment is defined as a determination that is consistent with principles of sound wildlife management and administration, available science and resources, and adherence to the requirements of applicable laws (16 USC 668ee(3)).

Similarly, planning for national parks must be guided by high-quality, scientifically acceptable information, data, and impact assessment, and the National Park Service is required to “integrate the best available science” into management plans (16 USC 5936; NPS 2006, sec. 4.1.1).

SCIENTIFIC AND TECHNICAL INFORMATION

Before initiating the bison and elk management planning process, the U.S. Fish and Wildlife Service and the National Park Service recognized the need to gather additional information that would be critical to developing and analyzing management alternatives. Many research projects were undertaken and funded by the planning project, while others were undertaken to provide information for the planning process, but were not funded by the project. These research and analysis projects supplement an already large information base, as found in the bibliography section of this document.

EXISTING PLANS AND AGREEMENTS

Several existing plans and agreements were considered in the formulation of goals and alternative sets of objectives and strategies. While plans and agreements are not as binding as legal directives, they can offer important management insights. It

is possible that one or more of the plans and agreements may require modification depending on the selected alternative (e.g., the interim goals and objectives for the National Elk Refuge, the 1974 cooperative agreement between the U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department, and the “Supplemental Feeding Handbook” for the refuge [USFWS 1981, 1986]).

USFWS PLANS

Fulfilling the Promise, The National Wildlife Refuge System

Fulfilling the Promise (USFWS 1999a) identifies visions for managing wildlife, habitat, and public use in the National Wildlife Refuge System, provides guidance and principles to achieve this vision, and identifies specific action items to be accomplished.

National Elk Refuge Plans

The National Elk Refuge’s most recent *Master Plan* was completed in 1965 (USFWS 1965). Although it identifies a few goals and objectives for wildlife and habitat management, the plan primarily deals with plans for the construction of buildings, the appropriation of water rights and improvements to water control facilities, and land acquisition.

An interim set of goals and objectives for the National Elk Refuge was finalized and approved in 1999 (USFWS 1999b). The interim goals and objectives will in turn be superseded by those adopted as a result of this planning effort.

The “Supplemental Feeding Handbook,” as revised (USFWS 1986), describes the procedures and guidelines for feeding elk and bison on the refuge and the duties and responsibilities of NER personnel. It also provides tables showing the amount of feed to distribute at different ration levels and herd sizes.

The *Fire Management Plan and Environmental Assessment* (USFWS 2002b) identifies fire management goals and objectives, fire management units, fire prevention strategies, fire suppression guidance and direction, and prescribed fire management strategies.

The *Irrigation System Rehabilitation Plan Environmental Assessment* (USFWS 1998) outlines improvements to the refuge irrigation program. The plan proposed converting approximately 1,200 acres of cultivated fields from the existing flood-irrigation system to sprinkler irrigation, which would result in higher water use efficiency, producing four time more forage while using less water than the current system. That proposal was not implemented but an experimental program was approved for 260 acres. A lack of funds has allowed only 60 acres to be irrigated with two side-roll irrigation lines.

NPS PLANS

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

Grand Teton National Park's *Master Plan*, approved March 19, 1976, describes the park's legislative background, including commitments, the resource, land status, and regional considerations (NPS 1976). The *Master Plan* classifies lands according to existing or allowable uses and development levels, and it subdivides the park into visitor experience zones. *Statements for Management* update issues and strategies for both the park (1989) and the parkway (1986).

Livestock Grazing Legislation and Agreements

Cattle and horses owned by private parties are grazed in Grand Teton National Park under authority of Public Laws 81-787 and 105-81. PL 81-787 authorized the continuation of livestock grazing permits that existed prior to September 14, 1950. Livestock grazing permits for private ranches outside the park were to continue for 25 years, and thereafter for the lifetime of the people possessing the livestock grazing permits and the lifetime of their heirs, successors, and assigns who were immediate family members as of 1950. Grazing permits for private ranch base lands within the park boundaries are to be renewed until the title of the lands vests in the United States. In 1950 there were 29 legislated permittees grazing approximately 4,230 animals on 67,640 acres in the park. Since then, the number of permittees has decreased to two as a result of permits expiring in accordance with the park's establishing legislation, ranches ceasing to operate, and for other reasons. The legislation establishing the park in-



Using prescribed fire on the National Elk Refuge.

tended for livestock grazing to be eventually eliminated from the park.

In 1997 PL 105-81 required a study of livestock grazing use and open space within and adjacent to the park. It also extended livestock grazing privileges for several permits under the 1950 law, pending implementation of recommendations made as a result of an open space study, except that the extensions would be canceled when land subject to the study was no longer used for ranching or other agricultural purposes (NPS 2001).

Fire Management Plan

The fire management program for Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway supports resource management goals and objectives that would benefit elk and bison by sustaining the natural array of vegetative communities that support these and other native species. This plan is further discussed under "Reasonably Foreseeable Actions."

STATE PLANS AND AGREEMENTS WITH OTHER AGENCIES

The U.S. Fish and Wildlife Service and the National Park Service actively involve state and other federal agencies in planning processes and in working cooperatively to protect natural resources from impacts caused by external activities (e.g., 16 USC 668dd(e)(3); NPS 2006, sec. 4.1.4). Outcomes of cooperative efforts must be consistent with legal directives and other legal and policy requirements governing the management of

the National Elk Refuge and Grand Teton National Park.

Specific to Grand Teton National Park, responsibilities of the Wyoming Game and Fish Commission would continue to include: (1) development of a program, in cooperation with the National Park Service, that includes elk reductions when necessary and that ensures the permanent conservation of elk within the park; (2) in cooperation with the National Park Service, yearly submission to the Governor of Wyoming and the Secretary of the Interior of joint recommendations for the management, protection, and control of the elk; (3) promulgation of the appropriate orders or regulations necessary to effectuate the management plan, once approved; and (4) issuance of elk licenses in accordance with the management plan.

WGFD Herd Objectives and Strategic Habitat Plan

The Wyoming Game and Fish Department's management goals and objectives (e.g., bull-to-cow ratios, herd objectives, and hunting seasons) are set through a public review process that requires public input and a final departmental recommendation to be approved by the Wyoming Game and Fish Commission. The department does not have a management or conservation plan for either the Jackson elk herd or the bison herd, but the agency has established population objectives for both herds.

- The Jackson elk herd objective is 11,000. The herd unit encompasses the southern end of Yellowstone National Park, Grand Teton National Park, John D. Rockefeller, Jr., Memorial Parkway, the National Elk Refuge, a large portion of Bridger-Teton National Forest, and various parcels managed by the Bureau of Land Management, the state, and private landowners in the Jackson Hole area.
- The Jackson bison herd objective is 350–400 animals. The herd's distribution is nearly entirely within Grand Teton National Park and the National Elk Refuge. Some bison venture onto Bridger-Teton National Forest, state, and private lands in the vicinity of Kelly and north of Jackson.

1958 Memorandum of Understanding

A memorandum of understanding dated March 31, 1959, between the Wyoming Game and Fish Commission, the U.S. Department of Agriculture (for the Forest Service), and the U.S. Department of the Interior (for the National Park Service and the Bureau of Sport Fisheries and Wildlife, which is now the U.S. Fish and Wildlife Service), relates to the maintenance and management of the Jackson elk herd. The agreement establishes an advisory council and a technical committee for a program known as the "Jackson Hole Cooperative Elk Studies Group." There is no established time limit for the memorandum, which became effective July 1, 1958.

1974 Cooperative Agreement

A cooperative agreement was signed by the U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department in 1974 (USFWS and WGFD 1974). It outlines a cooperative working relationship for managing the National Elk Refuge where there is mutual concern, including (1) fish habitat and fishing regulations, (2) elk hunting regulations, (3) elk feeding, (4) elk herd numbers, (5) habitat conditions for elk, and (6) studies related to elk and fish.

Article III of the agreement states that the refuge manager and the WGFD district supervisor will annually determine whether a hunting season on the refuge is necessary. Article IV of the agreement lists biological criteria to be considered in determining when winter feeding should begin in a given year. It requires USFWS and WGFD biologists to jointly monitor the specified biological parameters and to provide recommendations to the refuge manager and the WGFD district supervisor based on these criteria. The NER manager and the WGFD district supervisor are jointly responsible for determining when to initiate feeding on the refuge, along with procedures when they do not agree. Additionally, the agreement specifies that NER personnel are responsible for obtaining, storing, and distributing the supplemental feed, and that the state is responsible for paying at least half the cost of the feed.

Article V states that elk numbers are not to exceed 7,500 animals on the refuge, and that the Game and Fish Department is responsible for

keeping elk numbers below 7,500 through hunting. The agreement specifies that the number of animals could be revised based on habitat conditions, forage production and use, and other data. It also outlines provisions for culling seriously crippled and diseased animals, regardless of herd numbers.

Article VI outlines joint responsibilities with respect to collecting and synthesizing data required to determine habitat conditions, forage production and use, and trends on the refuge.

Greater Yellowstone Interagency Brucellosis Committee

The Greater Yellowstone Interagency Brucellosis Committee (GYIBC) was formed in 1995 to protect and sustain the existing free-ranging elk and bison populations in the Greater Yellowstone Area and to protect the public interests and economic viability of the livestock industry in Idaho, Wyoming, and Montana. The mission of the committee is to facilitate the development and implementation of brucellosis management plans for elk and bison, and their habitat, in the Greater Yellowstone Area.

JACKSON INTERAGENCY HABITAT INITIATIVE

The Jackson Interagency Habitat Initiative (JIHI) is a cooperative interagency effort focused on identifying potential treatment opportunities and management options for the long-term sustainability of native ungulates and their winter and transitional ranges in the Jackson Hole area. It involves biologists from the Wyoming Game and Fish Department, the National Elk Refuge, Grand Teton National Park, and Bridger-Teton National Forest. The group was formed in response to concerns about reduced habitat effectiveness on ungulate winter and transitional ranges and the desire to address such issues at a scale relevant to elk and in a manner emphasizing healthy, functioning ecosystems and using a cooperative, solution-oriented approach. The group's overall goal is

to maximize the effectiveness of native winter range for ungulates and a diversity of wildlife indigenous to this region through identification of habitat management opportunities. Emphasis will be

placed on enhancing distributions of elk on winter and transitional ranges. The emphasis on elk distribution stems from their current concentrations on and near feedgrounds and disease issues related to these concentrations (JIHI 2002).

The primary function of the group is to identify opportunities to improve the effectiveness of winter and transitional habitats used by elk (and other wildlife species). If an individual agency chooses to propose a project, it is responsible for any additional planning, NEPA and other compliance, and implementation. The Jackson Interagency Habitat Initiative would provide support for any of these tasks as requested.

SCOPING PROCESS

Important considerations in the development of goals, objectives, and strategies are the opinions, perspectives, and values of the stakeholders and the general public. The U.S. Fish and Wildlife Service and the National Park Service also consult with American Indian tribes and actively involve state agencies, local governments, local residents, and other members of the public in management planning processes. While there are no requirements to base management decisions on public opinion, agencies seriously consider input from the public. Several efforts were undertaken to gain a better understanding of future conditions that people would like to see with respect to elk, bison, and their habitat, and the strategies that people felt are necessary to achieve these conditions (Koontz and Hoag 2005; U.S. Institute for Environmental Conflict Resolution [USIECR] 2000). Results of the research were used to identify and fill potential gaps between the alternatives and stakeholder preferences. As described in "Chapter 5. Consultation and Coordination," the Fish and Wildlife Service and the Park Service have exceeded the minimum legal standards in involving stakeholders and the general public. A summary of stakeholder issues, values, and perspectives follows.

PUBLIC, TRIBAL, AND STAKEHOLDER ISSUES

Seven significant issues were identified during interagency meetings, meetings with USFWS and NPS staff, meetings with tribal governments and

organizations, and stakeholder meetings that involved the public (see “Chapter 5. Consultation and Coordination” for a description of meetings). These issues were considered in the formulation of alternative sets of objectives and strategies, and the refuge and the park strived to ensure that the range of alternatives encompassed the viewpoints expressed in the issue statements.

1. *Bison and Elk Populations and Their Ecology*

Most members of the public generally agreed that they want healthy bison and elk herds, whether for the abundance of recreational opportunities that this would sustain or for the benefit of the animals themselves and the ecosystem. There was considerable disagreement over how many animals in each herd would be desirable or needed. Some people thought that there are too many bison. Others felt that numbers for both herds should be determined by the carrying capacity of the environment and not arbitrarily set by humans. Some people thought that the current state objectives of 350–400 bison and 11,000 elk for the entire Jackson herds were just about right; others disagreed.

Public bison and elk hunting was recommended as an important management tool that keeps population numbers in check and offers recreational opportunities. Some stakeholders were against hunting of any kind, however, and felt that contraception is the only acceptable means of population control. Some felt that Native Americans should be allowed to take bison either by hunting or by relocating the animals to reservations.

Predation by native predators was viewed by some individuals as the preferred method of population control, while other stakeholders worried that wolves and a growing grizzly bear population would decimate the elk population. Some people concerned about growing populations of wolves and bears would like to see the maximum number of elk on the refuge increased to offset predator impacts. Others stated that predators are a vital part of the ecosystem and that viewing wolves and bears is important to many visitors and contributes to the economy.



Collecting antlers for the annual Jackson auction.

2. *Restoration of Habitat and Management of Other Wildlife Species*

Some people wanted to see habitat restored and improved, but opinions differed on the specifics of this goal. Some wanted the planning process to look at winter habitat throughout the region (that is, taking an ecosystem approach) and to encourage migration out of Jackson Hole to better distribute the herd. Others emphasized improving habitat in Grand Teton National Park and Bridger-Teton National Forest by eliminating cattle grazing, allowing wildfires to burn within prescription, and/or improving habitat on the National Elk Refuge through continued prescribed fires and increased irrigation, or conversely through the planting of only native plants and decreased irrigation. Some people said that a thorough analysis of the effects of both herds on vegetation in the valley is needed to determine the carrying capacity. However, some citizens pointed out that forage “under 4 feet of snow” is not available to ungulates, no matter how rich or diversified it may be. Some people expressed concerns about the adverse effects that elk and bison may be having on native habitats (especially willow, aspen, and cottonwood communities) and associated wildlife.

3. *Winter Feeding Operations of Bison and Elk*

Comments regarding feeding covered every possible scenario, from not feeding bison or elk at all, to feeding every winter. Some stakeholders did not want bison to be fed on the National Elk Refuge where they might compete with elk. Feeding in Grand Teton National Park was suggested as an alternative. Other people recommended that the agencies consider phasing out feeding over the long term, taking into account forage production, habitat improvement, and expansion of winter range. Some stakeholders felt that winter feeding on the refuge should continue, but the way in which elk and bison are fed should change (e.g., switching from pellets to hay, increasing the number of feeding locations, and feeding earlier to protect habitat).

4. *Disease Prevalence and Transmission*

There was discussion about brucellosis and the high rates of infection in both the bison and elk herds. This disease is of concern because of the economic effect it could have on livestock producers if contracted by cattle. Suggestions for dealing with the problem included conducting additional research; vaccinating elk, bison, and cattle; enforcing health certificate requirements on the Department of the Interior; removing cattle from the area; and treating bison and elk equally when considering the risk of disease transmission to cattle. Some stakeholders were concerned with the potential of other more serious diseases getting into the herds. They felt there is a need to assess this risk with regard to the feeding program, and one person suggested developing a contingency plan for any epidemic that may occur. Encouraging elk to leave the National Elk Refuge and migrate to other public lands was one suggested method of alleviating this risk, while other individuals felt that well-fed elk were less likely to contract diseases. Many agreed that more research on diseases was warranted.

5. *Recreational Opportunities*

Many people expressed concern that changes in the management of elk and bison on the National Elk Refuge and in Grand Teton National Park would impact hunting and viewing

opportunities. Hunting was identified as a popular form of recreation, but viewing wildlife, specifically bison and elk, was also recognized as an important recreational pastime for all visitors. The agencies were encouraged to consider and manage the conflicts between winter recreation and wildlife. Although some people felt these conflicts were an educational matter, others felt that all recreation impacts on wildlife should be limited to avoid stressing animals during a critical period in their life cycle.

6. *Cultural Opportunities, Traditions, and Lifestyles*

Tribal representatives and other members of the public have stated that American Indian tribes should be actively involved in decisions regarding bison. Some Native Americans have traditions and spiritual values that are closely associated with both elk and bison. Local residents also expressed concern about how changes in elk and bison management would affect their own traditions and lifestyles, which are in part dependent on wide-open spaces and plentiful wildlife.

7. *Commercial Operations and the Local and Regional Economy*

Wildlife viewing and hunting were identified as contributing to the local economy. Many businesses depend on abundant wildlife, and outfitters and dude ranchers in particular rely on elk and bison to provide hunting opportunities. Some people expressed concerns about the effects of changes in bison and elk management on the local economy and the quality of life in Jackson Hole.

AREAS OF POTENTIAL COMMON GROUND AMONG THE PUBLIC, TRIBES, AND STAKEHOLDER GROUPS

The U.S. Fish and Wildlife Service and the National Park Service are required to consider public, tribal, and stakeholder perspectives. While there is increasing emphasis on working toward decisions that accommodate the interests of the greatest number of people, public opinion cannot be adequately represented in one set of perspectives.

Potential areas of common ground were identified to a certain extent, and the results were considered in formulating alternatives. Although many of the opinions were widely divergent, there were several common themes. Based on pre-scoping, scoping, and alternative development meetings and a situation assessment report (USIECR 2000: 25), the following areas of potential common ground were identified.

1. The public, tribes, and stakeholders generally want sustainable and healthy herds of elk and bison.
2. Habitat is critical for elk and bison conservation, and winter range in the Jackson Hole area should be maintained and enhanced.
3. To the extent that elk begin to use enhanced winter range, some stakeholders otherwise opposed to reductions in supplemental feeding may be willing to accept a reduction as long as numbers of elk in the Yellowstone National Park, Teton Wilderness, and Gros Ventre herd segments can be maintained at or close to existing levels on an annual basis.
4. Most groups would like to see continued access to elk and bison for a variety of uses (recognizing that some stakeholders are opposed to hunting).
5. The bison and elk herds are important to people in the Jackson area, the state, American Indian tribes, and the nation.
6. To the extent that changes are made in management, there is a general desire for incremental, rather than drastic or premature, changes in management.

PUBLIC ISSUES CONSIDERED, BUT NOT EVALUATED FURTHER

Several issues identified during pre-scoping and scoping phases were not considered in detail in this planning process because they are either outside the scope of this planning process or they are in conflict with legal mandates, authorities, policies, or the jurisdiction of the agencies (USFWS and NPS 2002). These issues included state's rights, treaty rights, greater consideration for local opinion, and predator rights.

THE SCOPE OF THIS DOCUMENT

GEOGRAPHIC SCOPE

This planning process considers several different geographic areas — the decision area, the primary analysis area, the secondary and cumulative effects analysis area, and the socioeconomic analysis area. (The first three areas are depicted on the “Analysis and Decision Areas” map).

- *Decision area* — The decision area is the National Elk Refuge, Grand Teton National Park, and John D. Rockefeller, Jr., Memorial Parkway. Management decisions made through this planning process will only direct management actions within these jurisdictions.
- *Primary analysis area* — The Jackson elk herd uses a much larger area than the decision area, and this larger area is called the primary analysis area. As the name implies, this area is the primary focus for the analysis of environmental impacts associated with the alternatives. The analysis area encompasses the boundary of the Jackson elk herd unit, as defined by the Wyoming Game and Fish Department. This area includes a portion of Yellowstone National Park south of Yellowstone Lake, John D. Rockefeller, Jr., Memorial Parkway, Grand Teton National Park, the National Elk Refuge, the portion of Bridger-Teton National Forest west of the Continental Divide and north of Jackson, and private land along the Snake River north of Jackson (see the “Analysis and Decisions Areas” map). The primary analysis area also encompasses the area occupied by the year-round movement of bison addressed in this document.
- *Secondary analysis area* — Several alternatives could result in the migration of elk south into the upper Green River valley and the Red Desert as a result of reduced winter feeding on the refuge. This area is believed by some to be within the historical range of the Jackson elk herd (see the “History of Elk in Jackson Hole” in Chapter 3). Neither the U.S. Fish and Wildlife Service nor the National Park Service has management jurisdiction of lands in these areas. Federal lands are managed by the U.S. Forest Service as

part of Bridger-Teton National Forest or by the Bureau of Land Management.

To address the possible effects of a potential migration, resources within this secondary analysis area are analyzed. The secondary analysis area consists of lower elevation winter elk range in Sublette County, along with higher elevation migration corridors between the Gros Ventre and Green River drainages. Although the amount of migration that might occur is unknown, the potential effects of increased elk wintering in this area are analyzed. The boundary of this secondary analysis area is shown on the “Reasonably Foreseeable Activities” map.

The secondary and cumulative effects analysis area was delineated in accordance with direction from the Council on Environmental Quality (CEQ 1997), which states that the appropriate area for analyzing cumulative effects is the largest geographic area with resources that could be affected by the preferred alternative.

- *Social and economic analysis area* — The management of elk and bison may have social and economic effects. The socioeconomic analysis area includes the town of Jackson, Teton County in both Wyoming and Idaho, and the State of Wyoming.

REASONABLY FORESEEABLE ACTIONS

Reasonably foreseeable actions are those actions by any entity, governmental or private, that may have effects when combined with the effects of the management alternatives on resources within the secondary and cumulative effects analysis area. For example, the Wyoming Department of Transportation and the Federal Highway Administration are beginning efforts to reconstruct U.S. Highway 26/287 from Moran Junction to Dubois. The section of the highway west of Togwotee Pass is within the primary analysis area. The cumulative effects of each alternative, when combined with the effects of U.S. Highway 26/287 reconstruction west of Togwotee Pass and all other reasonably foreseeable actions, are described in Chapter 4. The types of actions analyzed in the cumulative effects analysis can be grouped into four broad categories:

- transportation improvements
- federal land management activities
- Snake River restoration activities
- population growth and private land development

TRANSPORTATION IMPROVEMENTS

Togwotee Pass Transportation Improvements

U.S. 26/287 is a primary east-west route in northwest Wyoming that provides access to the Jackson Hole area from the east. The Wyoming Department of Transportation (WYDOT) and the Federal Highway Administration (FHWA) plan to reconstruct U.S. 287/26 between Moran Junction and Dubois to improve safety, accommodate future traffic, correct design deficiencies, and improve visitor experience while minimizing impacts to the natural and human environment and maintaining consistency with adopted federal, state, and local plans.

The western two-thirds of the highway project area occurs within the boundaries of the Jackson elk herd and the primary analysis area. Most of the crucial winter and parturition habitats and movement corridors, where elk are concentrated during winter and during spring and fall migrations, occur in this area. The majority of motor vehicle accidents within the highway project area involving elk (1990 to 2001) occurred primarily in the Buffalo Fork and Blackrock Creek sections in the Buffalo Valley area of Jackson Hole. More than two-thirds of the documented accidents occurred in the winter. These sections contain crucial elk winter range or migration corridors to and from crucial winter range.

The reconstructed road will include two 12-foot travel lanes with 8-foot shoulders (WYDOT and FHWA 2003). To address concerns associated with wildlife crossings and vehicle collisions, additional data about wildlife movements across the highway were collected to aid in project design and construction. This study was completed in February 2005 (Western Ecosystems Technology 2005). The Wyoming Department of Transportation will coordinate with the U.S. Forest Service, the Wyoming Game and Fish Department, the U.S. Fish

Analysis and Decision Areas

and Wildlife Service, and other interested agencies during project development and design to ensure that the most recent information regarding terrestrial and aquatic crossings and important wildlife movement zones within the project area are addressed with specific project design features. Such design features would include:

- minimizing the removal of woody vegetation
- using oversized culverts (multi-resource crossings) and wildlife underpasses
- minimizing the number, length, and height of retaining walls and guardrails
- implementing seasonal speed restrictions
- reclaiming shrub and tree cover to the edge of the clear zone
- reclaiming shrub cover within the clear zone

Hoback Junction Transportation Improvement Environmental Impact Statement

The Wyoming Department of Transportation and the Federal Highway Administration are currently developing an environmental impact statement to evaluate proposed road and bridge improvements and to stabilize landslide areas along U.S. Highways 26/89/189/191 in the Hoback Junction area south of Jackson. A draft impact statement is expected to be completed by early 2007. Project implementation is expected to start after 2008 (Weinstein, pers. comm. 2006).

FEDERAL LAND MANAGEMENT ACTIVITIES

National Park Management Activities

Grand Teton National Park Fire Management Program

In 2004 Grand Teton National Park completed a *Fire Management Plan* to provide direction and flexibility for fire management that is consistent with updated policy guidance and scientific understanding (NPS 2004b). The *Fire Management Plan* allows fire management staff to use multiple tools available (i.e., prescribed fire, mechanical treatments, wildland fire use, and suppression) to manage fire. Planned actions would on average include the mechanical treatment of 60–100 acres per year for the next four to six years (mostly in Wildland-Urban Interface areas). The prescribed fire treatments are predicted to be close to the

current annual 10-year average of 1,486 acres. A small portion (0–300 acres annually) may be part of the hazard fuel reduction program. The focus of prescribed fires would be sagebrush/grassland and mixed aspen/conifer communities, but concerns about burning in sage grouse habitat would likely limit treatment options in the near term.

Wildland fire use would be expanded as a result of the ability to use fire throughout the park, adaptive management, and enhanced flexibility to use prescribed and mechanical treatments as tools to reduce risks associated with wildland fire use. An adaptive fire management process would allow fire within the ecosystem based on broader, more clearly defined resource objectives (NPS 2004b).

Grand Teton National Park Transportation Study

The National Park Service released a *Draft Transportation Plan and Environmental Impact Statement* for Grand Teton National Park in May 2005 (NPS 2005b). The document evaluates several alternatives for developing a system of multi-use pathways throughout the park. Alternatives include (1) no action, 2) minimal action, 3) a preferred alternative, and 4) extended pathways. The preferred alternative includes a mix of separated multi-use pathways, improved roadway shoulders, phased implementation of a bus transit service, and re-alignment of the Moose-Wilson Road. The impact statement found that Alternatives 1, 2, and 3 would have long-term, minor, adverse impacts to mammals in the park, while the impacts of Alternative 4 would be slightly greater, resulting in long-term, moderate, adverse impacts to mammals. A final impact statement is expected to be published in late 2006.

Jackson Hole Airport Use Agreement Environmental Assessment

The Jackson Hole Airport is located entirely within Grand Teton National Park on lands owned by the United States and under the administrative jurisdiction of the National Park Service. The airport operates under the terms and conditions of a 50-year use agreement between the Jackson Hole Airport Board and the Department of the Interior. Under this agreement operations are authorized until April 27, 2033. An environmental assessment is being prepared to address a request by the Jackson Hole Airport Board to extend the

use agreement for 20 years (Wilson, pers. comm. 2006).

Grand Teton National Park Recreation Facility Improvements

In 2005 the National Park Service began to consider plans to rebuild the Gros Ventre campground near the northern boundary of the National Elk Refuge. While the existing campground footprint will not change, the reconstruction may increase campground occupancy and will include RV hookups (Schulman, pers. comm. 2005). A draft environmental assessment for this project will be completed after additional information is gathered and analyzed (Wilson, pers. comm. 2006).

Temporary Winter Use Plan — Grand Teton / Yellowstone National Parks and John D. Rockefeller, Jr., Memorial Parkway

The *Temporary Winter Use Plan* allows 720 snowmobiles per day in Yellowstone, all commercially guided. In Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway, 140 snowmobiles per day are allowed. With minor exceptions, all snowmobiles are required to meet best available technology requirements. The plan is to be in effect for three winters, allowing snowmobile and snowcoach use through the winter of 2006–7 (NPS 2004e). The National Park Service is currently developing a long-term plan for managing winter recreational use in the Yellowstone/Grand Teton areas that will consider various alternatives for managing snowmobile and snowcoach use in the parks. A draft environmental impact statement is expected to be released in late 2006 (Wilson, pers. comm. 2006).

Bridger-Teton National Forest Management Activities

Fuels Management and Habitat Enhancement

Bridger-Teton National Forest is currently planning a variety of fuel reduction, habitat enhancement, and timber sale projects, totaling over 9,400 acres of national forest land. These projects are listed in Table 1-1.

Moose-Gypsum Project

The Pinedale Ranger District of Bridger-Teton National Forest is proposing a variety of management actions within the approximately 110,397-acre upper Green River watershed to meet desired future conditions, goals, and objectives for various resources. Activities include vegetation and fuels management (including timber harvest), travel management, and recreation resource management, including dispersed campsite closure and rehabilitation. The project is designed to be compatible with other resource values, including recreation, wildlife, range, and wilderness objectives. The *Final Environmental Impact Statement* for this project identifies that all of the proposed vegetation treatments have the potential to impact elk due to temporary disturbance of habitat. However, the impact statement also includes mitigation measures to reduce impacts to elk in the project area (USFS 2006a).

TABLE 1-1. PLANNED FUELS REDUCTION AND HABITAT ENHANCEMENT PROJECTS — BRIDGER-TETON NATIONAL FOREST (2005–2007)

Location	Project Description
South of Buffalo Valley	Includes four projects that comprise 1,871 acres of forest designated for thinning, landscape burn, and timber sale. The largest is a 1,300-acre landscape burn area known as the JIHI NE quadrant, which is designated for a landscape burn.
Buffalo Valley	Includes several projects in the Buffalo Valley that comprise about 1,000 acres of forest for thinning, landscape burn, and timber sale.
North of Buffalo Valley	Includes three projects that comprise 4,700 acres of forest designated for timber sale, thinning, and landscape burn.
Gros Ventre Drainage	Includes two projects that comprise 370 acres of forest for timber sale, thinning, and pile.
Lower Gros Ventre Valley	Wildlife habitat enhancement using prescribed fire and band-felling of conifers.
East of National Elk Refuge	Includes two projects that comprise 1,510 acres of forest designated for thinning and landscape burn.
Togwotee Pass	Includes the clearing of forest within road right-of-way of planned highway expansion. Total acreage is unknown.
North Fork Fish Creek	Salvage of diseased trees within 250 acres of the upper North Fork of the Fish Creek drainage.
Green River Lakes Campground	Includes the selected removal of trees to stop the mountain pine beetle epidemic near the Green River Lakes campground. Total acreage is unknown.

SOURCE: Norman, pers. comm. 2005; USFS 2005; USFS 2006b.

BLM Activities

Snake River Resource Management Plan

The Bureau of Land Management owns and manages 12 relatively small parcels along the Snake River and the Gros Ventre River within the secondary analysis area. The *Snake River Resource Management Plan* documents plans to transfer the BLM parcels to another public land managing agency, or to other public or governmental entities (BLM 2003b). While no specific restrictions for management will be placed on the parcels as they are transferred, acquiring agencies or entities will be required to manage the parcels to preserve public access, recreational use, open space, and wildlife habitat values (BLM 2003b).

The plan will limit access to minerals, and public lands and the mineral estate will be closed to leasing for oil and gas and other leasable minerals. Salable minerals, in particular sand and gravel, will be available only in the active river channel; access to sand and gravel will be subject to provisions to protect sensitive resources.

Several other land management agencies have expressed interest in participating in the management of these parcels, and they are working to develop a management plan. Whatever management actions are taken, the agencies would be constrained by the *Resource Management Plan*, which stipulates that these parcels must continue to provide open space, wildlife habitat, public access, and recreation values (Roadifer, pers. comm. 2005).

Upper Green River Special Recreation Management Area Recreation Project Plan

The purpose of the *Upper Green River Special Recreation Management Area Recreation Project Plan* is to establish a 20-year plan for the physical improvement and management of BLM-administered land along 9 miles of the upper Green River corridor northeast of U.S. 189/191 (BLM 2003c). The project area is a multiple-use area with recreation and livestock grazing. Recreational uses include camping, fishing, floating, hunting, horseback riding, all-terrain vehicle use, and mountain biking. Proposed actions include improving roadways, adding and replacing camping and picnic facilities, improving boat ramps, developing scenic

overlooks, and improving 9.5 miles of trail (BLM 2003c).

Pinedale Anticline Oil and Gas Exploration and Development Project

The Bureau of Land Management issued a “Record of Decision” for the Pinedale Anticline Oil and Gas Exploration and Development Project in 2000. The decision allows the construction and drilling of up to 900 wells; the completion, testing, and production of up to 700 producing natural gas well pads; the completion of about 400 miles of pipeline; and the development of 276 miles of access road and other features within the project area.

While the “Record of Decision” generally discusses impacts to “big game crucial winter range,” that discussion is in reference to deer and antelope populations. Impacts to wintering elk are not specifically addressed in the document. To ensure the protection of wintering big game, all surface-disturbing or human activity associated with construction, including roads, pipelines, well pads, drilling, completion, or workover operations, will be restricted by season and location (BLM 2000).

Jonah Infill Drilling Project

The Bureau of Land Management issued a “Record of Decision” on the Jonah infill drilling project in March 2006. The decision allows oil and gas operators to drill up to an additional 3,100 natural gas wells on the existing Jonah field, which is about 32 miles southeast of Pinedale near the southern end of the secondary analysis area for the bison and elk management plan. The decision limits the total disturbance to the project area to 46% of the area (14,030 acres). Operators will be required to begin reclamation as soon as disturbed areas are no longer needed for drilling activities. The decision acknowledges that wildlife habitat impacts would be substantial due to full field development, and mitigation of those impacts includes off-site habitat improvement projects and on-site reclamation (BLM 2006).

SNAKE RIVER RESTORATION ACTIVITIES

In 1964 the U.S. Army Corps of Engineers (USACE) completed the construction of a continuous system of levees along the Snake River

within and south of Grand Teton National Park. While the levees have contributed significantly toward reducing flood risk along the river corridor, the levees have, over time, significantly changed the physical character of the river system and contributed to the loss of environmental resources. For example, the quantity of riparian habitat, within the levees, decreased from 2,761 acres in 1956 to 1,176 acres in 1986. The quality of the remaining riparian habitat has also declined.

The Corps of Engineers is implementing a restoration effort to remove gravel and to construct channel stabilization pools, secondary channels leading to and from off-channel pools, off-channel pools, spur dikes (bank barbs and kickers), eco-fences (both rock and piling fences), anchored root wad logs, and rock grade control structures. Two of the restoration areas are within the primary analysis area for the bison and elk management plan. One is on the upstream side of the Wyoming Highway 22 bridge, while another would be near the confluence of the Snake and Gros Ventre rivers. Both areas were identified in the Corps' environmental assessment as migration corridors for elk and critical habitat for moose.

The purpose of this environmental restoration project is to restore fish and wildlife habitat that was lost as a result of construction, operation, and maintenance of the levees. The project is needed to prevent further degradation and destruction of environmental resources within the study area and to facilitate recovery of lost aquatic and terrestrial habitat. A variety of wildlife species that use the Snake River have been affected by declines in wetland and riparian vegetation, including shrub/willow and cottonwood communities. Many other wildlife species use the aquatic and terrestrial habitat in the project area, including trumpeter swans, whooping cranes, moose, elk, mule deer, various fur bearers, and numerous small mammals (USACE 1999).

POPULATION GROWTH AND PRIVATE LAND DEVELOPMENT

Population growth and private land development are anticipated to continue in the primary analysis area in Teton County, as well as in the secondary analysis area in Sublette County. Population projections are summarized in Table 1-2.



Grand Teton National Park and the Snake River.

TABLE 1-2: ESTIMATED POPULATION GROWTH IN THE SECONDARY ANALYSIS AREA.

County	2005 Population	2020 Population	Percentage Change
Teton	19,705	26,671	35
Sublette	6,586	8,135	24
Lincoln	15,551	17,868	15
Sweetwater	36,654	32,759	-11

SOURCE: Wyoming Department of Administration and Information 2005.

Based on Teton County data, Wyoming's population projections are generally low. According to the *Jackson / Teton County Comprehensive Plan*, the county's actual population, including seasonal employees, residents, and visitors, ranges between 135% and 150% of the permanent population in the spring and fall, increasing to about 185% in the winter and to 375% in the summer (Jackson/Teton County 1994).

Primary Analysis Area

Within the primary analysis area, private lands account for 67,500 acres (3%) of developed and undeveloped land in Jackson Hole (Jackson Hole Land Trust 2003; see Chapter 3, "Social and Economic Conditions"). Throughout Jackson Hole, an estimated 23,500 acres of private land have been developed, and an estimated 15,000 acres could be developed in the near future, of which about 7,000 acres of private developable land are of particular importance to the Jackson elk and bison herds, as well as the management alternatives. Areas of particular importance include the Gros Ventre Junction / Snake River area to the west of the refuge, the Kelly area immediately to the north of

TABLE 1-3: ESTIMATED POTENTIAL DEVELOPMENT OF PRIVATE LAND IN THE JACKSON HOLE AREA

Area	Developed Acres	Acres Protected by Conservation Easements	Acres That Could Be Developed (parcels over 35 acres)	Total Acres in Area
Gros Ventre Junction / Snake River	3,600	1,200	2,400	7,200
Buffalo Valley	420	1,220	2,260	3,900
Kelly	200	1,200	2,340	3,800

the refuge, and the Buffalo Valley area about 15 miles north of the refuge. Potential development and existing conservation easements in these areas are described in Table 1-3 and are shown on the “Reasonably Foreseeable Activities” map.

Some of these areas provide staging and migration corridors for elk, while others provide winter range for elk and possibly bison (see Chapter 3). An eight-foot fence along the west side of the National Elk Refuge generally precludes direct movement between the refuge and private lands south of Gros Ventre Junction.

Private lands between the Jackson Hole Airport and Gros Ventre Junction are identified as an east-west migration corridor between the Teton Range and the National Elk Refuge. Most of the private land in this area is platted and zoned for single-family residential development. Areas adjacent to the Snake River are larger in size and are zoned rural.

Private lands in the Buffalo Valley area also include or are on the fringes of winter range for elk. Most of the private land in the Buffalo Valley area is zoned rural. Several national forest inholdings occur along the Gros Ventre River east of the town of Kelly. All of these inholdings are zoned rural (Teton County, WY 2005).

All of the private lands in the Buffalo Valley area, most of the private lands in the Jackson Hole Airport area, and all of the inholdings along the Gros Ventre River within about 10 miles of the town of Kelly are included in Teton County’s Natural Resource Overlay (NRO) zoning district. This district was established to protect wildlife and their respective habitats, and development standards have been implemented to protect migration routes and crucial winter elk range (Teton County, WY 2002).

Several contiguous parcels to the south and west of the Jackson Hole Airport are protected by con-

servation easements held by the Jackson Hole Land Trust, The Nature Conservancy, and the Teton County Scenic Preserve Trust. One of the largest parcels that is contiguous to the elk winter range in the Buffalo Valley area is protected by a conservation easement held by the Jackson Hole Land Trust. Two parcels along the Gros Ventre River east of Kelly are also protected by conservation easements held by the Jackson Hole Land Trust (Teton County, WY 2005).

Secondary Analysis Area

In Sublette County most of the private lands within the secondary and cumulative effects analysis area are zoned agricultural. This zoning is intended to promote agricultural use, but it is possible for parcels to be subdivided to a minimum of 35 acres per dwelling unit (Sublette County, WY 2002). While subdivision and development of these areas are not documented in any county plans, residential development is a regular occurrence. About 3,000 acres of private land are protected by conservation easements held by the Green River Valley Land Trust (Macdonald, pers. comm. 2005).

Most of the private lands in Lincoln and Sweetwater counties are outside the secondary analysis area. Population growth and land use changes in Lincoln County are not anticipated to affect wintering elk. The population of Sweetwater County is expected to decline in the long term, which would not affect wintering elk in the area.

SCOPE OF NEPA COVERAGE

The bison and elk management planning document, when finalized, will provide programmatic coverage in accordance with the National Environmental Policy Act. There will be a sufficient level of analysis to change the number of elk and bison inhabiting the National Elk Refuge, Grand Teton National Park, and John D. Rockefeller, Jr., Memorial Parkway (depending on the alternative) and to allow management actions included in the

Reasonably Foreseeable Activities

selected alternative to be implemented. These strategies and actions may include:

- elk hunting on the refuge, including changes to hunt areas
- elk herd reduction program in the park, including changes to hunt areas
- bison hunting on the refuge
- fertility control of bison on the refuge and in the park
- management of cultivated fields on the refuge, including irrigation and farming
- conversion of previously cultivated fields to native vegetation in the park
- exclosures to protect woody vegetation from elk and bison on the refuge
- winter feeding on the refuge, including possible reductions
- vaccination of elk on the refuge using Strain 19
- vaccination of bison on the refuge using RB51
- the use of other vaccines that are efficacious

DESIRED CONDITIONS AND MANAGEMENT GOALS

DESIRED CONDITIONS

By the end of the 15-year implementation period, the National Elk Refuge and Grand Teton National Park provide winter, summer, and transitional range for large portions of the Jackson bison and elk herds. The environment supports a full complement of native plant, wildlife, and breeding bird species. Refuge and park staffs, working with others, adaptively manage bison and elk in a manner that contributes to the state's herd objectives yet allows for the biotic integrity and environmental health of the resources to be sustained. As a result, the public enjoys a variety of compatible, wildlife-dependent recreational opportunities.

MANAGEMENT GOALS

Four goals for the bison and elk management plan were developed based on the desired conditions and purposes of the National Elk Refuge and Grand Teton National Park, the missions of the National Wildlife Refuge System and the National Park System, and other legal and policy directives. The goals also consider the input received from the public, tribes, and other stakeholder groups during the prescoping and scoping phases of the planning process. While public and tribal opinions vary greatly on how to manage the bison and elk populations, all recognize the significant resource and heritage values of these herds to the Jackson area, the state, tribal governments, and the nation.

The alternatives developed and considered in this document respond to these four goals. Each alternative is based on specific objectives and strategies to achieve these goals. Many differences, as well as similarities, are highlighted in the objectives and strategies for each alternative.

Pursuant to the National Wildlife Refuge System Planning Policy (602 FW 1, 3, 4), the U.S. Fish and Wildlife Service is required to develop management plans by developing goals, objectives, and strategies (Adamcik et al. 2004). The four goals developed for this process are as follows.



Wetland woodland habitat in good condition.

GOAL 1: HABITAT CONSERVATION

National Elk Refuge

Provide secure, sustainable ungulate grazing habitat that is characterized primarily by native composition and structure within and among plant communities and that also provides for the needs of other native species.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

In concert with restoring and perpetuating natural ecosystem functioning in Grand Teton National Park and the parkway, restore and maintain the full range of natural structural and compositional characteristics of native habitats used by bison and elk, emphasizing the plant species diversity that native habitats would support.

Basis for Goal 1

National Elk Refuge

Based on the legal policy mandates for the National Elk Refuge, a balanced conservation program is one that will ensure the following:

- healthy, productive grassland and woodland habitat is sustained for the benefit of elk and

bison as an overriding target, which will also benefit other native wildlife communities

- all activities aimed at sustaining elk and bison numbers above the natural carrying capacity of the land (e.g., farming and irrigation, winter feeding) will not prevent the Fish and Wildlife Service from accomplishing other refuge purposes and other legal directives pertaining to other wildlife species

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

The conservation of park resources and values, and the maintenance of resources and values in an unimpaired condition, are the primary responsibilities of the National Park Service. Specifically, NPS managers are required to preserve natural components and processes of ecosystems in natural condition to the greatest extent possible, including natural change over time (NPS 2006, sec. 4.1).

Furthermore, the National Park Service does not attempt to solely preserve individual species (e.g.,



Mule deer — another ungulate species on the refuge.

bison and elk) outside the context of preserving natural ecosystems. Rather, it attempts to maintain all components and processes of naturally evolving park ecosystems. This is why the goal to restore and maintain natural habitat conditions for bison and elk is prefaced by “in concert with restoring and perpetuating natural ecosystem functioning in Grand Teton National Park.”

GOAL 2: SUSTAINABLE POPULATIONS

National Elk Refuge

Contribute to elk and bison populations that are healthy and able to adapt to changing conditions in the environment and that are at reduced risk from the adverse effect of non-endemic diseases.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

Perpetuate to the greatest extent possible natural processes and the interactions of bison and elk with natural environmental fluctuations influenced by fire, vegetation succession, weather, predation, and competition. At the same time support public elk reductions in Grand Teton National Park, when necessary, to achieve elk population objectives that have been jointly developed by the Wyoming Game and Fish Department, Grand Teton National Park, and the National Elk Refuge. Support elk hunting in the John D. Rockefeller, Jr., Memorial Parkway that is consistent with its establishing legislation.

Basis and Intent for Goal 2

National Elk Refuge

The mission of the National Wildlife Refuge System requires that refuges sustain healthy populations of wildlife (16 USC 668dd(a)(2), 668dd(a)(3)(A), 668ee(4)), to the extent consistent with refuge purposes (16 USC 668dd(4)(D)). In general, a healthy population refers to a population that continues or is sustainable over the long term, with minimized risks of irreversible or long-term adverse effects to the herds and other species (50 CFR 100.4). The purpose of this goal is to contribute to sustaining a healthy population because the National Elk Refuge is only part of the area inhabited by the Jackson herds and cannot, by itself, sustain the entire bison or elk population.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

NPS policies require that elk and bison be managed in such a manner that their populations will be perpetuated or sustained over the long term. Because most of the elk and bison summering in Grand Teton National Park and parkway overwinter on the National Elk Refuge, the successful achievement of Goal 2 for the refuge is critical to meeting the NPS mandates for the park.

GOAL 3: NUMBERS OF ELK AND BISON

National Elk Refuge and Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

Contribute to the WGFD herd objectives for the Jackson elk and bison herds to the extent compatible with Goals 1 and 2, and the legal directives governing the management of the National Elk Refuge, Grand Teton National Park, and John D. Rockefeller, Jr., Memorial Parkway.

Basis and Intent of Goal 3

National Elk Refuge

Both the U.S. Fish and Wildlife Service and the National Park Service are required to work with other agencies managing the same resources. The U.S. Fish and Wildlife Service is required to coordinate the development of comprehensive conservation plans with state wildlife conservation plans to the extent practicable and not inconsistent with legal directives (16 USC 668dd(e)(3)(B)). Contributing to WGFD herd objectives is consistent with the USFWS policy calling for refuges to contribute to natural population densities and natural levels of variation at larger landscape scales, especially when habitat has been lost in the surrounding landscape or ecosystem (USFWS 2001, sec. 3.7.C, 3.14.C). USFWS policy allows higher winter densities of elk and bison on the refuge in order to allow natural densities to be sustained during other seasons in the southern greater Yellowstone ecosystem, providing that the refuge is managed primarily to fulfill refuge purposes and to achieve the mission of the National Wildlife Refuge System (16 USC 668dd(a)(3)(A)).

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

NPS policy speaks generally to contributions that national parks make to conserving species at larger landscape scales. For example, “in addition to maintaining all native plant and animal species and their habitats inside parks, the [National Park] Service will work with other land managers to encourage the conservation of the populations and habitats of these species outside parks whenever possible” (NPS 2006, sec. 4.4.1.1). However, there are no allowances for permitting elk or bison populations to exceed natural densities in Grand Teton National Park, even when this would contribute to natural population levels for the larger landscape. PL 81-787 requires the National Park Service, in cooperation with the Wyoming Game and Fish Department, to implement a program for ensuring the permanent conservation of elk within Grand Teton National Park. Therefore, the park’s contribution to WGFD herd objectives would be dictated by natural population densities and natural population fluctuations in the park and parkway (see Goal 2).

The bison herd size is being revisited through this planning process. The refuge and the park comprise nearly the entire range of the Jackson bison herd.

GOAL 4: DISEASE MANAGEMENT

National Elk Refuge and Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

Work cooperatively with the State of Wyoming and others to reduce the prevalence of brucellosis in the elk and bison populations in order to protect the economic interest and viability of the livestock industry, and reduce the risk of adverse effects for other non-endemic diseases not currently found in the Jackson elk and bison populations.

Basis and Intent of Goal 4

Elk and bison management on the refuge and in the park are not limited to actions taken to benefit these species. Their management also involves mitigating unintended consequences of past, present, and potential future management of elk and bison on the refuge and in the park. For example,

winter feeding is responsible for a high prevalence of brucellosis in elk and bison. Brucellosis does not pose a risk to the elk and bison populations inhabiting the refuge and the park (Smith and Robbins 1994; B. L. Smith 2001; NPS and USFWS 1996), and it is widely viewed that brucellosis is primarily an issue of importance to the livestock industry (Thorne et al. 2002; Hendry 2002; Ragan 2002a and 2002b). Because of the potentially severe effects that brucellosis outbreaks in cattle could have on the Wyoming livestock industry, a range of alternatives for addressing this issue is being examined in this planning process.

The “economic interest and viability of the livestock industry in the State of Wyoming” is directly tied to maintaining the regional class-free designation for the state by the Animal and Plant Health Inspection Service. Class-free status could be affected by the way in which elk and bison are managed on the refuge and in the park because the potential exists for infected elk or bison to transmit the disease to susceptible livestock (those that either have no natural immunity, have not been vaccinated, or have been vaccinated but the vaccination did not impart immunity).