National Park Service
U.S. Department of the Interior
Yellowstone National Park
ID, MT, WY

Commercial Stock Outfitter Concession Contracts Environmental Assessment

November 8, 2013

Commercial Stock Outfitter Concession Contracts

Environmental Assessment

Summary

The National Park Service (NPS) is proposing to issue concession contracts for commercially guided saddle and pack stock use in Yellowstone National Park (YNP or park). The purpose and need of the proposed action is to provide opportunities for visitors to experience the backcountry of YNP using guided saddle and pack stock tours while protecting the natural and cultural resources of the park. The existing number of permits (44) would be offered in a prospectus with right of preference to a new concessions contract to existing contract holders (36 CFR §51.26-51.35). The project area is located within YNP in Wyoming, Montana, and Idaho. Three alternatives, including a No Action alternative, are analyzed in this Environmental Assessment (EA). Alternative A is the No Action alternative. Under this alternative, existing permits would expire at the end of their term and no new commercial saddle and pack stock outfitter-guide concession contracts would be issued. Alternative B would issue up to 44 10- year concessions contracts to commercial saddle and pack stock outfitter-guides, with a continuation of current management actions. Alternative C would also issue up to 44 concessions contracts, provide increased monitoring and management flexibility to respond to resource impacts. Alternative C is the NPS's preferred alternative.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential issues and impacts to the park's resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics that are included in this document because the impacts may be greater-than-minor include soils, vegetation, rare plants, wetlands, water quality, wildlife, special status species, archeology, wilderness, socioeconomics, public health and safety, visitor use and experience, and park operations. All other resource topics were dismissed because the project would result in negligible or minor effects to those resources. No major effects are anticipated as a result of this project. Public scoping conducted to assist with the development of this document resulted in a total of 156 individuals submitting correspondence that included 503 comments. A majority of the comments were in support of continuation of the status quo, with no additional limits placed on commercial saddle and stock use.

Public Comment

If you wish to comment on the EA, you may post comments online at http://parkplanning.nps.gov/StockEA , hand-deliver during normal business hours to the mailroom in the park's Administration Building, or mail comments to: Compliance; Commercial Stock Outfitter Concession Contracts EA, P.O. Box 168, Yellowstone National Park, Wyoming 82190. This EA will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you may request to have your personal identifying information withheld from public review, we cannot guarantee that we will be able to do so. Comments will not be accepted by fax, email, or in any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted.

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CHAPTER 1: PURPOSE AND NEED

1.1 Introduction

Yellowstone National Park encompasses 2.2 million acres and is located primarily in the northwest corner of Wyoming, with portions extending into southwestern Montana and southeastern Idaho. The park is the core of the Greater Yellowstone Area (GYA), an approximately 18-million-acre area that includes Grand Teton National Park and John D. Rockefeller Jr. Memorial Parkway to the south, seven national forests, three national wildlife refuges, three American Indian reservations, state lands, towns, and private property. The GYA is the largest and most nearly intact temperate ecosystem in the contiguous United States. Established by an Act of Congress on March 1, 1872, YNP was designated as the first national park in the world, and as a United Nations Biosphere Reserve and a World Heritage Site nearly 100 years later. Through subsequent legislation and administrative guidelines, including the NPS Management Policies 2006, Yellowstone's fundamental purpose continues to be the preservation of its cultural and natural resources. In 1972, 90 percent of YNP was recommended for wilderness designation, under the Wilderness Act of 1964. Congress has never acted on this recommendation, but in accordance with the NPS Management Policies 2006, the park manages the area so as not to preclude designation.

After exceeding 3 million visitors for the first time in 1992, annual visitation at Yellowstone fluctuated between 2.8 and 3.1 million until new records were set in 2009 (3.3 million) and 2010 (3.6 million). About 70% of the visitation occurs from June through August. Fall visitation has increased since the 1980s and now comprises about 21% of annual use; winter visitation has never been more than 6% of the annual total. Lodging and campgrounds in the park can accommodate about 14,300 visitors each night during the summer.

The purpose of this Environmental Assessment (EA) is to examine the environmental impacts associated with concessions contracts for commercially guided saddle and pack outfitter use activities within YNP. Currently, the park has 44 contracts for guided saddle and pack stock tours. The current 10-year contracts would have expired in December, 2013, but have been extended for one year to December, 2014, in order to accommodate this EA. This project presents an opportunity to analyze the impacts of commercially guided saddle and pack stock use in YNP and provides mechanisms to monitor and manage use based on resource impacts. It is not the intent of this plan to eliminate stock use in the park, but rather, to manage commercial use in accordance with the 1998 National Park Service (NPS) Concessions Management Improvement Act and the NPS Management Policies 2006.

This EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, Section 106 of the National Historic Preservation Act (NHPA), regulations of the Council on Environmental Quality (CEQ) (40 CFR §1508.9), and NPS Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-Making*).

1.2 Background

Saddle and pack stock is historically entrenched in western heritage and was first used in the Yellowstone area by Native Americans. Later in the 1800's stock was used for exploration, hunting, land management, protection, travel and recreational purposes. During the first expeditions and exploration of what would become YNP, stock was the primary mode of transportation. However, with the advent of tourism, horse drawn stagecoaches also played a significant role in the history of YNP, as they were the first mode of transportation used to move guests from area train stations to the park's attractions. By 1915, 1,000 automobiles per year were entering the park, resulting in conflicts with horses and horse driven transportation. In subsequent years horse travel on roads was prohibited. Nevertheless, stock historically facilitated access to Yellowstone's remote backcountry and continues to be used by private,

concessioner, and NPS personnel today. In 1880, there were 312 miles of trails listed in the park, but by 1938 it had 989 miles of trails (Rosenberg 2013).

Saddle and pack stock in YNP includes horses, burros, mules, ponies, and llamas. The park has 97 trailheads, more than 1,000 miles of trails, and 293 designated backcountry campsites; of those, 104 allow stock. More than 95 percent of YNP is considered backcountry.

Concessioner Stock Use

Under the authority of its concession contract to provide a variety of services in Yellowstone, Xanterra Parks and Resorts offers guided interpretive horse trail rides in Mammoth, Roosevelt, and Canyon. Rides are one or two hours long and use specific trails. Xanterra also offers stagecoach and wagon rides at Roosevelt. The wagon rides are part of the Roosevelt cookout. Over the past ten years, Xanterra's trail ride business has decreased. In 2003, the company took 25,425 guests on rides. In 2012, it took 16,822 (Table 1-1).

Under the authority of their concession contracts to provide guided interpretive saddle and pack stock tours of Yellowstone, 44 businesses take clients into the backcountry of the park on day and overnight trips. Throughout the document, these businesses are referred to as commercial saddle and pack outfitters. With the approval of the Secretary and subject to certain conditions, a concessioner may transfer its contract to another entity.

In addition to the two types of concessioner stock use, there are two other types of stock use in the park:

- Administrative – NPS personnel use stock for backcountry access, patrols, search and rescue, and to haul supplies to project areas that would be prohibitive on foot or with mechanized equipment. Administrative stock use in the backcountry is not currently tracked by YNP.

- Private – The general public can bring their stock into the park for recreational purposes. Overnight private stock use is tracked; however, private day stock use is not currently tracked by YNP.

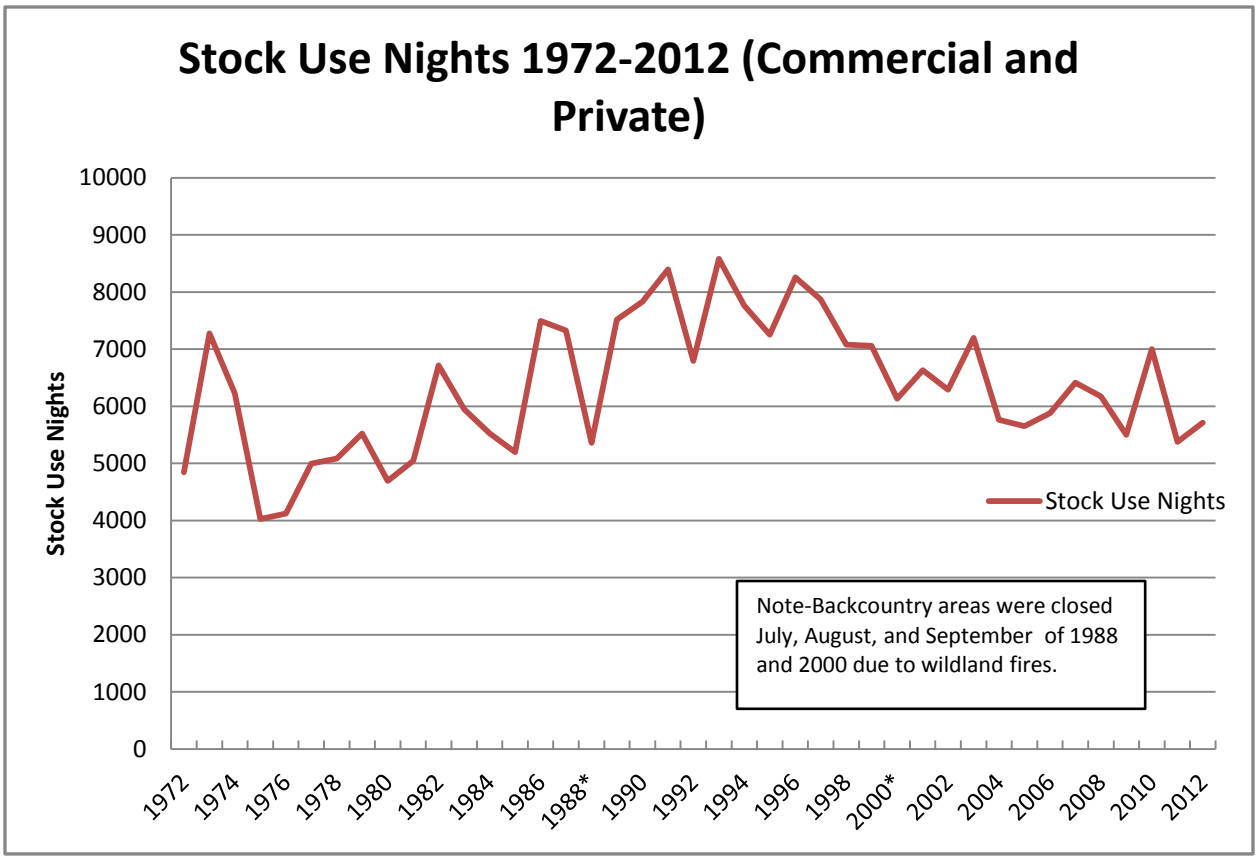

Figure 1-1 Yellowstone National Park Stock Use Nights

Several types of stock trips exist in the park, including:

- Overnight Stock Use – Commercial saddle and pack outfitters, private users, and NPS personnel take overnight stock trips in the park. Commercial saddle and pack trips are guided horseback riding trips with meals, a cook, and most or all camping gear provided. Trips may be progressive or base camp in style. Progressive trips occupy several designated backcountry sites during the trip. Base camp trips stay at one designated backcountry site for the entire trip and take day rides or hikes to nearby attractions. Trips vary from 2 to 10 days. Each campsite has a limit on the number of people, stock, and consecutive nights of occupancy allowed. Stock outfitter guides are permitted to make advance reservations for designated stock sites if an authorized guide accompanies the party for the entire trip and the Backcountry Use Permit is in the outfitter's name. Overnight commercial stock use is processed by Yellowstone's Central Backcountry Office through a reservation system, which was implemented in 1984. An average of 6,488 stock use nights occurred annually in the park's backcountry between 1972 and 2012 (Figure1-1). Commercial and private overnight stock use in the park varies from year to year, but has shown no overall increase or decline. Clients typically meet stock outfitters at trailheads prior to their trip time.

  Commercial stock outfitters may begin submitting reservation requests in early January and may book up to ten total reservation requests per outfitter prior to April 15 (2 in January, 2 in February, and 6 in March). Though reservations are made well in advance, overnight trips are not allowed until July 1. Most of Yellowstone's trails are open and maintained for stock use from July 1 through October. However, some trails and campsites may not be open and accessible due to wet conditions, trail clearing, and bear management restrictions. Trails that are

prohibited or not recommended for stock use due to safety or resource impact concerns are listed in Appendix A.

Regulations for stock use are outlined in the park's Horsepacking brochure available on the NPS website (http://www.nps.gov/yell/planyourvisit/horseride.htm). This brochure was developed to provide information to private users traveling into the backcountry and explains how to manage stock at the trailhead and on the trail, proper procedure for managing stock in camp, as well as information on safety in bear country. Commercial stock outfitters are subject to all the regulations listed in the brochure as well as those in operating plans (Appendix C). An operating plan is a document outlining the rules and regulations that govern the activities of the commercial stock outfitters. This document is an appendix to the concession contract and is updated annually as needed.

- Drop Camps – Drops camp trips are offered by commercial saddle and pack outfitters. These are guided trips where visitors and gear are transported to a backcountry campsite and dropped off. No further guiding services are provided. When providing drop camp service to a non-stock site, the commercial outfitter is required to keep stock out of the core camp at all times. The commercial outfitter then returns to pick-up clients on a prearranged day. Drop camp trips are counted as day rides and tracked by the Central Backcountry Office. Drop camp trips include popular fishing spots such as Slough Creek, Fan Creek, and Specimen Creek.

Year	Xanterra day rides-total stock	Year	Commercial outfitters day rides-total stock
2003	25425	2003	4106
2004	20250	2004	4005
2005	20687	2005	4972
2006	20826	2006	5235
2007	20265	2007	4485
2008	21465	2008	4324
2009	16886	2009	4431
2010	18111	2010	3996
2011	18658	2011	4379
2012	16822	2012	4364

Table 1-1 Commercial day stock use (Xanterra and commercial outfitters)
Note-Available Xanterra day-use records begin in 2003

- Day Rides -Horseback rides with pack support for a portion of one day with no overnight use. Day rides range from 2-8 hours, with the majority lasting 4 hours and occurring in the north end of the park. The majority of these rides are provided by the concessioner, Xanterra, whose day ride stock totals have declined since 2003, while commercial stock outfitter day stock totals have increased slightly (Table 1-1 and Figure 1-2). Xanterra day rides begin in late May in Mammoth and in June in Roosevelt and Canyon. Between 1994 and 2012, the annual average number of commercial stock use day rides was 550 (Figure 1-2).

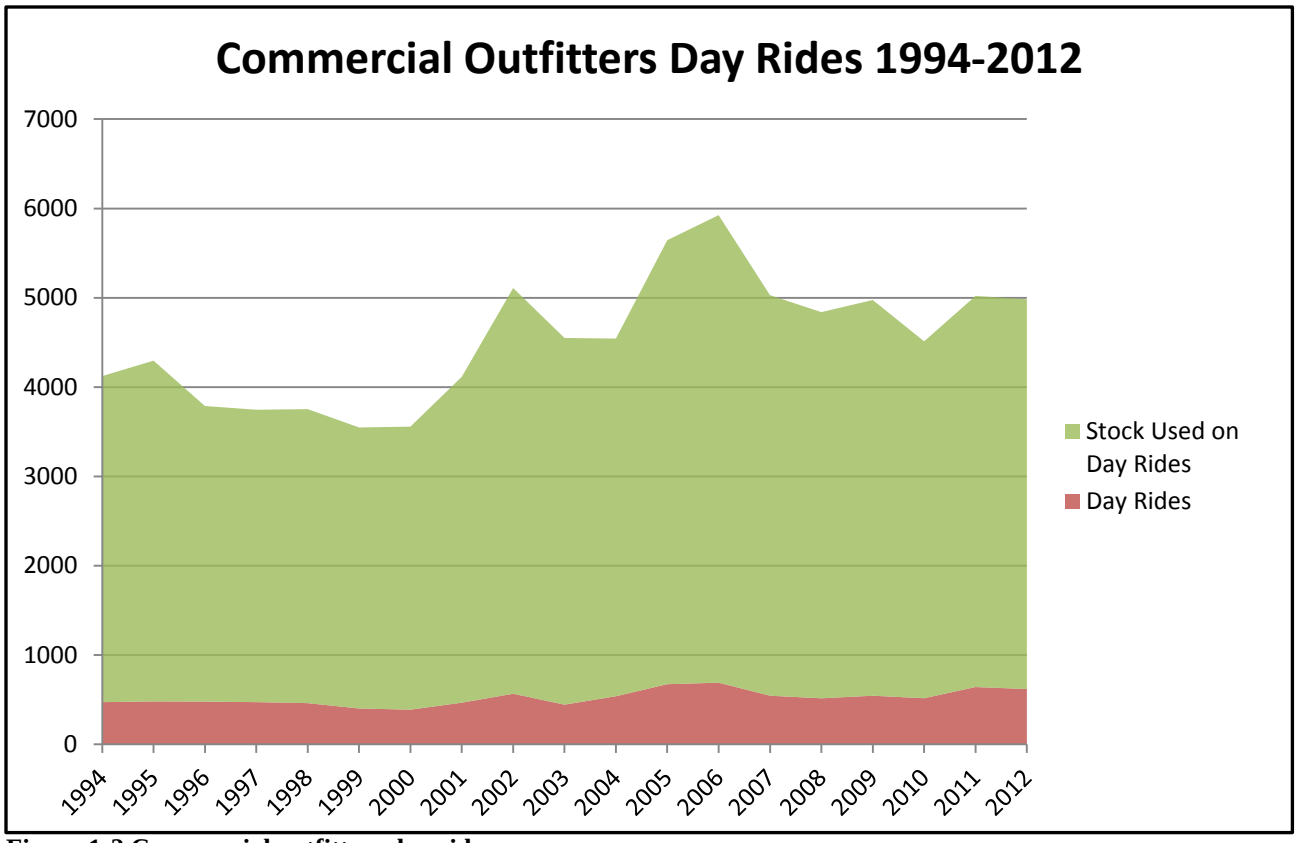

Figure 1-2 Commercial outfitters day rides

1.3 Purpose and Need

The purpose and need of the proposed action is to allow for and provide opportunities for visitors to experience the backcountry of Yellowstone National Park by guided saddle and pack stock trips and to protect the natural and cultural resources of the park. The proposed action should meet the following objectives:

1. Continue to provide an opportunity for a suitable visitor experience, particularly for those visitors who could not experience the backcountry otherwise.
2. Maintain appropriate levels of commercial saddle and pack stock use in the park that would not result in an increase in degradation of resources.
3. Comply with concessions law, the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), the 2006 NPS Management Policies, and all appropriate rules and regulations.
4. Maintain the level of commercial saddle and pack stock use in the recommended wilderness at the minimum necessary for public education and visitor enjoyment.

1.4 Relationship to Other Plans and Policies

The Commercial Stock Outfitter Concession Contracts EA is consistent with the following plans and policies:

Yellowstone Wilderness Recommendation (1972)

In 1972 the National Park Service recommended that 2,032,721 acres of YNP be designated by an act of congress as wilderness. With this recommendation the NPS must ensure that no actions or proposals for action will adversely affect the wilderness characteristics and values that made the area eligible for inclusion in the National Wilderness Preservation System.

Yellowstone National Park Master Plan (1974)
The Master Plan strived to balance human impacts and preservation of park natural, cultural, and scenic resources by developing objectives for General Management, Resource Management, Visitor Use, and Interpretation. The plan specifically addressed the historical value of stock use.

> "*Roosevelt will become the focal point for all horse concession based station operations. Expansion of this activity, to consist of backcountry packtrips of varying duration, will be encouraged. Unloading ramps and holding corrals at major trailheads, with additional horse trails to accommodate this use, should be studied and developed at an early date." p.18*

National Park Service Concessions Management Improvement Act of 1998 (P.L. 105-391)
This act provides the requirements under which commercial visitor services are authorized in units of the national park system. Section 402(b) provides:

> It is the policy of the Congress that development of public accommodations, facilities and services in units of the National Park System shall be limited to those accommodations, facilities and services that
> (1) are necessary and appropriate for public use and enjoyment of the unit of the national park system in which they are located; and
> (2) are consistent to the highest practicable degree with the preservation and conservation of the resources and values of the unit.

National Park Service Management Policies (2006)
Section 10.2.2 of the Management Policies directs that the National Park Service must ensure allowed park uses would not cause impairment of, or unacceptable impacts on, park resources and values. A decision to authorize or expand a park concession will be based on a determination that the service

- is consistent with enabling legislation, and
- is complementary to a park's mission and visitor service objectives, and
- is necessary and appropriate for the public use and enjoyment of the park in which it is located, and
- is not, and cannot be, provided from outside the park boundaries, and
- incorporates sustainable principles and practices in planning, design, siting, construction, and maintenance, and
- adopts appropriate energy and water conservation, source reduction, and environmental purchasing standards and goals, and
- will not cause unacceptable impacts.

Management policies on wilderness clarify the Wilderness Act for management of commercial services on wilderness lands managed by the National Park Service. Section 6.4.4 directs the following:

> *Wilderness-oriented commercial services that contribute to public education and visitor enjoyment of wilderness values or provide opportunities for primitive and unconfined types of recreation may be authorized if they meet the "necessary and appropriate" tests of the National Park Service Concessions Management Improvement Act of 1998 and section 4(d)(6) of the Wilderness Act (16 U.S.C. § 1133(d)(5)), and if they are consistent with the wilderness*

management objectives contained in the park's wilderness management plan, including the application of the minimum requirement concept.

Commercial Services Strategy (2009)
The Commercial Services Strategy found that the current suite of commercial visitor services in YNP was appropriate and consistent with current park planning.

Superintendent's Compendium (2012)
The purpose of the compendium is to provide the public and park employees with a document that lists the special designations, closures, public use limits, permit requirements and other restrictions imposed under the discretionary authority of the Superintendent.

36 CFR § 1.5
This regulation provides authority for the park superintendent to close or restrict all or some public use or activities in an area. The use of permit, registration, or reservation systems can be employed as a tool for accomplishing the public use limits. The superintendent must make a determination that such action is necessary "for the maintenance of public health and safety, protection of environmental or scenic values, protection of natural or cultural resources, aid to scientific research, implementation of management responsibilities, equitable allocation and use of facilities, or the avoidance of conflict among visitor use activities" and must explain why less restrictive measures would not suffice.

1.5 Scoping

According to CEQ regulations 40 CFR 1501.7, scoping is a "process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action." Yellowstone National Park conducted internal scoping with appropriate NPS staff, as described in more detail in the *Consultation and Coordination* chapter. The park also conducted external scoping with the public and interested/affected groups and Native American tribes.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposed action and to generate input on the preparation of this environmental assessment. The scoping period began on February 28, 2013 and ended April 15, 2013. Scoping information was also posted on PEPC. In addition, five public meetings were held in Bozeman, Montana on March 11; Jackson, Wyoming on March 12; West Yellowstone, Montana on March 13; Gardiner, Montana on March 18; and in Cody, Wyoming on March 20. Over 60 individuals attended these open-house format meetings, engaged in discussion with park staff, and provided comments.

During the 45-day scoping period, a total of 156 individuals submitted correspondence that included 503 comments. A majority of the comments were from individual citizens residing in Montana (24.2 percent), Washington (24.2 percent), California (9.6 percent), and Wyoming (7.0 percent). Approximately 54 percent of the correspondence received was from members of Back Country Horseman groups and 8 percent from commercial outfitters. The predominant comment themes were the significant role of stock use in visitor enjoyment and accessibility, stock use as a traditional part of the park's history, and opposition to restrictions or limits on day rides or backcountry use. Other comments related to impacts included the need for a comprehensive plan for all user groups, hiker/stock conflicts, trail maintenance, and excessive horse manure. Comments were used to confirm the project purpose and need, identify additional impact topics to be analyzed, and develop the range of alternatives. Specific issues and concerns raised in public scoping are shown in Appendix B.

1.6 Impact Topics Retained For Further Analysis

Impact topics for this project were identified on the basis of federal laws, regulations, and orders; *NPS Management Policies 2006*; and NPS knowledge of resources at the park. Impact topics that are carried forward for further analysis in this EA include:

- Soils
- Vegetation, Rare Plants, and Wetlands
- Water Quality
- Wildlife
- Threatened, Endangered, and Special Status Wildlife
- Archeology
- Wilderness
- Socioeconomics
- Visitor Use and Experience
- Park Operations

1.7 Impact Topics Dismissed From Further Analysis

As described in the "Environmental Consequences" chapter in this EA, the NPS takes a "hard look" at all potential impacts by considering the direct, indirect, and cumulative effects of the proposed action on the environment, along with connected and cumulative actions. In those cases where impacts are either not anticipated or are expected to be minor or less, the issues and impact topics are dismissed from detailed analysis. As described in NEPA regulations, NEPA analysis should focus on issues that are truly significant to the action in question, rather than amassing needless detail (Council on Environmental Quality (CEQ) NEPA regulations, 40 CFR 1500.1 (b)). This section identifies the impact topics dismissed from detailed analysis in this EA and provides the rationale for the dismissal. Generally, issues and impact topics are dismissed from detailed analysis for one or more of the following reasons:

- The resource does not exist in the analysis area.
- The resource would not be affected by the proposal, or the likelihood of impacts are not reasonably expected (i.e., no measurable effects)
- Through the application of mitigation measures, there would be minor or less effects (i.e., no measurable effects) from the proposal, and there is little controversy on the subject or reasons to otherwise include the topic.

The NPS uses the concept of "no measurable effects" to determine whether impact topics are dismissed from further evaluation to concentrate its analyses on issues that are truly significant to the action in question, rather than amassing needless detail (CEQ NEPA regulations, 40 CFR 1500.1(b)). For each issue or topic presented below, if the resource is found in the analysis area or the issue is applicable to the proposal, then a limited analysis of direct, indirect, and cumulative effects is presented.

Air Quality

The Clean Air Act of 1963 (42 U.S.C. 7401 et seq.) was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act establishes specific programs that provide special protection for air resources and air quality related values associated with National Park Service units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air

pollution standards. The act also establishes a national goal of preventing any future and remedying any existing man-made visibility impairments in Class I areas. Yellowstone National Park is a Class 1 area and extends into five counties in three states, including Park and Teton in Wyoming, Park and Gallatin in Montana, and Fremont in Idaho. None of the five counties have air pollution levels that persistently exceed the national ambient air quality standards and are designated as nonattainment status (EPA 2011). Overall, commercial stock use could result in local, short-term negligible degradation of local air quality from fugitive dust. However, the Class I air quality designation for park would not be affected. Because there would be negligible effects on air quality, this topic is dismissed from further analysis in this document.

Climate Change

Although climatologists cannot be certain of the specific long-term consequences, it is clear that the planet is experiencing global climate changes that affect ocean currents, sea levels, polar sea ice, and global weather patterns. Although this is likely affecting precipitation patterns and amounts in Yellowstone, it would be speculative to predict localized changes in temperature, precipitation, or other weather facets, in part because many of the variables are not fully understood. The actions proposed in this EA would not affect or contribute to overall greenhouse gas emissions. Therefore, the possible effects of climate change on commercial stock use are dismissed from further analysis.

Cultural Landscapes

The NPS defines cultural landscapes as geographical areas associated with historic events, activities, or people that reflect that park's history, development patterns, and the relationship between people and the park. Cultural landscapes at the park include Fort Yellowstone, the Old Faithful area, North Entrance, Stephen's Creek, Artist's Point, Apollinaris Spring, Roosevelt Lodge, and the Tower Ranger Station. None of the actions under consideration in this EA are expected to affect the characteristics of these areas that contribute to their designation as cultural landscapes. Therefore, potential impacts on cultural landscapes from the alternatives in this EA are not analyzed in further detail.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed activities would not take place in areas where minorities and low-income populations and communities could realize disproportionate health or environmental effects. Therefore, this topic has been dismissed from further analysis.

Ethnographic Resources

The NPS Director's Order 28, Cultural Resource Management, defines ethnographic resources as any site, structure, object, landscape or natural feature assigned traditional, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it (NPS 1997). Discussions with the 26 Native American tribes associated with the park to identify park resources significant to tribes have been ongoing for years. Although no specific area has been identified, many tribes have identified the general importance of thermal water and geyser features, and the various minerals found in the thermal areas, as important resources to be preserved and protected. A variety of common plants found throughout the park have been identified as having been used for food, medicinal and other purposes, many of which are still used today. Some of the plants are potentially located in areas where commercial stock use activities occur. All of the plants identified are common and are plentiful in many locations within and outside the park. Because ethnographic resources potentially affected by this project are less than minor, this topic has been dismissed from further analysis.

Floodplains
Executive Order 11988 (Floodplain Management), requires all federal agencies to avoid construction within the 100-year floodplain unless there is no other practicable alternative. The 2006 NPS Management Policies and Director's Order 77-2, Floodplain Management, strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order 77-2, certain construction within a 100-year floodplain requires preparation of a statement of findings. There will be no net loss of floodplains and no construction in these areas as a result of implementing the actions proposed in this EA. None of the proposed actions has the potential to affect floodplain values or contribute to hazardous floodplain conditions. Therefore, this topic has been dismissed from further analysis.

Historic Structures
The National Historic Preservation Act, as amended in 1992 (16 USC 470 et seq.), the National Environmental Policy Act, NPS Director's Order 28, Cultural Resource Management Guideline (NPS 1997), Management Policies (NPS 2006), and NPS Director's Order 12, Conservation Planning, Environmental Impact Analysis and Decision-making (NPS 2011), all require the consideration of impacts on cultural resources listed in, or eligible for listing in, the National Register of Historic Places (National Register). Historic properties are the buildings, structures, objects, cultural landscapes and districts listed in or eligible for listing on the National Register of Historic Places. There are seven nominated historic districts. Seven individual properties, which include multiple buildings, have been designated as National Historic Landmarks. Historic structures were not included for analysis because the potential impacts of the actions proposed in this plan would not affect the integrity of these structures.

Hydrothermal Resources
NPS Management Policies (2006, Section 4.8.2.3) emphasize the protection, preservation, and management of hydrothermal resources as a critical component of the park's natural resource systems and for public education, interpretation, and scientific research. Stock use is not permitted in hydrothermal areas and would have no effect on this resource. For this reason, hydrothermal resources have been dismissed as an impact topic.

Soundscape Management
In accordance with *Management Policies* 2006 and Director's Order-47 *Sound Preservation and Noise Management*, an important component of NPS's mission is the preservation of natural soundscapes associated with national park units (NPS 2006). Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscapes is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among NPS units as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas. Commercial stock use creates short-term, negligible amounts of noise. Therefore, soundscapes was dismissed from further analysis.

Prime and Unique Farmlands
In August 1980, the Council on Environmental Quality directed federal agencies to assess the effect of their actions on farmland soils classified as prime or unique by the U.S. Department of Agriculture's Natural Resources Conservation Service. Prime or unique farmland is defined as soil that produces general crops such as common foods, forage, fiber, and soil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. Yellowstone National Park has no prime or unique farmlands; therefore this impact topic was dismissed.

Indian Trust Resources

Indian trust resources are land, water, minerals, timber, or other natural resources or property rights that are held in trust by the United States for the benefit of federally recognized Indian tribes or nations or an individual tribal member. Trust resources would not be affected by the alternatives in this plan.

Lightscape Management

NPS Management Policies (2006, Section 4.10) emphasize the protection of natural lightscapes not only for the enjoyment and experience of visitors, but also for the protection of ecological integrity. Mitigation strategies are articulated, including restricting the use of artificial lighting only when necessary, utilizing minimum impact techniques and shielding lights to prevent unwanted light scatter. The proposed action would not have any impact on lightscape management; therefore this impact topic was dismissed.

CHAPTER 2: ALTERNATIVES CONSIDERED

2.1 Overview of Alternatives

The development of alternatives began with a public scoping newsletter distributed on February 28, 2013, and subsequent public open house meetings at which the public was asked for their ideas and concerns related to alternative approaches for accomplishing the project objectives. These public meetings, along with meetings of an interdisciplinary team of NPS employees, resulted in the definition of project objectives as described in the *Purpose and Need*, and a list of action alternatives that could potentially meet these objectives. A total of three alternatives, including the no action, are evaluated in this EA. Alternatives that were dismissed from further consideration are described later in this chapter.

2.1.1 Actions Common to All Alternatives

Backcountry Use Data Collection

Yellowstone National Park is in the process of developing a park-wide Social Science Strategy. The strategy is a programmatic report that outlines a systematic, forward-thinking, and focused research agenda for an innovative YNP social science research program. The strategy has identified Yellowstone's lack of data about backcountry day use as an impediment to smart management and the challenges to managing and monitoring one particular user group (commercial stock outfitters) without information about the bigger picture of backcountry use, especially private stock use. More detailed data documenting the use patterns (by ranger district or region), practices, socio-demographic characteristics, values, motivations and potential resource impacts of Yellowstone's backcountry user communities would be useful for park planning initiatives, including the proposed plan. Under all alternatives, the park proposes to conduct on-the-ground semi-structured field surveys with appropriately sized samples of each priority user community so that Yellowstone can collect the more detailed contextual data (who uses the backcountry, why, and how) needed to craft effective planning and monitoring strategies.

2.1.2 Alternative A – No Action

Under Alternative A, commercial stock outfitter contracts would not be issued. There would be no commercially guided saddle and pack tours in YNP when the current contracts expire in December, 2014. Since no contracts would be issued, no mitigation measures or Operating Plan would be necessary. No changes to administrative, Xanterra, or private stock use would occur. Trails, campsites, and trailheads would continue to be monitored to assess conditions and impacts to resources.

According to CEQ's Forty Questions, the analysis of the no action alternative "is necessary to inform the Congress, the public, and the president as intended by NEPA," and that analysis of the no action alternative "provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives."

2.1.3 Actions Common to Alternatives B and C

Potential impacts to park natural and cultural resources typically occur at designated backcountry campsites, saddle and pack stock use areas, along established trails, social trails, along streams and waterways, and around trailheads and parking areas. Currently, backcountry rangers assess impacts to park resources as part of outfitter evaluations and as part of their backcountry patrol duties. While there have been some resource monitoring practices established in Yellowstone, there have not been clearly defined resource monitoring protocols developed for systematic evaluation and adaptive management of park backcountry use. Funding has been reserved for two seasonal employees to implement resource monitoring.

The components of a resource monitoring plan associated with commercial recreational use would include the following steps conducted annually and on an established periodic cycle:

1. Tracking the amount and location of commercial uses in the park's backcountry.
2. Developing set protocols to survey and monitor natural and cultural resources that are affected or have the potential to be affected by recreational use.
3. Assess park assets such as trails, bridges, trailheads, and parking areas that may be affected by recreational use.

The following resource monitoring efforts would occur under the two alternatives:

Tracking Commercial Use

A key component to monitoring natural and cultural resources would be the ability to track backcountry use associated with commercial use. The park concessions office would be responsible for maintaining records of the types, areas, and amount of use associated with different commercial uses. This information will notify park resource monitoring staff where heavy use would occur or be expected and guide where resource monitoring should be directed.

Monitoring

- **Vegetation** – The more habitual impacts to backcountry use occurs to vegetation and soil resources. Moreover, past resource monitoring has been focused primarily on vegetation monitoring. Key to vegetation monitoring would be to continue these established monitoring methods including:
    1. Campsite Inventories – These were first developed in 1992 and were redesigned in 2007. Methods included a visit to all designated backcountry campsites and measurements of areas of bare ground and trampled vegetation associated with the core campsite. Damage to trees and nonnative invasive vegetation was recorded. These assessments would determine visitor use levels in the backcountry, and to establish criteria for "no net loss" management of backcountry and wilderness values. These assessments should be conducted on a 5-10 year cycle to identify localized long-term impacts and issues, and adjust as needed management of campsite use.
    2. Grazing Analysis – Campsites that allow stock have been evaluated using an established, 'grazed loop' method to determine the amount of forage utilized by stock retained near campsites. This method was developed by U.S. Forest Service for permitted grazing allotments. If grazing utilization occurred greater that 35-50%, then vegetation species composition would likely change and adjustments to stock use would need to be adjusted to maintain impacts below these thresholds.
    3. Social Trails – As part of systematic resource surveys, development of social trails would continue to be surveyed and photo points and condition assessments would be established. The commercial user reporting to park concessions office will be critical to inform the park of off-trail use so that staff can respond and monitor off-trail use and potential impacts associated with high volume use and development of social trails.

- **Water Quality** – Backcountry campsite and trailhead inventories would evaluate water quality impacts to nearby streams from campsite latrine use and stock waste. This would include visual inspection of campsites and stock grazing areas and water sample analysis if determined necessary.

- **Geothermal Resources** – The primary concerns of backcountry use in the geothermal areas are safety, illegal off trail travel, and vandalism to geothermal resources. Known geothermal and hydrothermal areas would be evaluated using photo-points to determine occurrence and extent of

off-trail travel and damage to these resources.

- **Wildlife** – The primary concerns with park wildlife and backcountry use is food and garbage storage and sanitation of areas after use. Problems associated with improper food storage could lead to increased food conditioning of bears and other wildlife. Monitoring would emphasize food storage and assure storage methods such as food poles and bear boxes are in place and in good condition. In addition, high levels of human use could lead to habituation of bears and wildlife to people. In areas where food sanitation is compromised, or bear and other wildlife habituation occurs, recreation use would be addressed and changed if necessary. Additional concerns relate specifically to stock use during occasional backcountry stock mortality events (e.g. horses, mules, llamas). These events can result in carcass presence that typically attracts wildlife and results in increased human safety risks and food conditioning to areas adjacent to trails and designated camp sites. Such cases require temporary closures and suspension of recreational activities until either the carcass is removed or fully utilized.

- **Archeology** – Archeological resources can be affected by backcountry use, mostly on and off-trails and in campsites, from erosion, trampling, compaction and illegal artifact take. Stock use trails and facilities would be monitored to assess conditions and impacts to archeological resources. Monitoring would build from established archeological assessment protocols and existing site conditions, in order to identify and evaluate archeological resources potentially impacted by recreational use. In addition, accidental discoveries potentially related to such use would be documented.

Park Asset Assessment
The park maintains infrastructure in order to offer visitors adequate facilities as part of their experience. These include maintenance of park backcountry trails, campsites, trailheads and parking areas. Backcountry assets such as trails and campsites are designed and maintained to help absorb impacts to natural and cultural resources, but can deteriorate with increased use. The park would continue with established asset assessments associated with backcountry use. With more accurate records of where and how commercial use will occur, park staff would emphasize these assessments to recognize failing structures such as trail bridges and erosion control structures, trailhead parking areas with associated features such as bumper logs, striping, etc. Information from these asset assessments would be used to prioritize park maintenance activities and/or adjust recreational use patterns.

2.1.4 Alternative B – Continue Commercial Stock Outfitter Use at Current Operating Conditions

Alternative B continues commercial stock outfitter use at current levels. Under this alternative the NPS would issue 10-year commercial saddle and pack contracts, up to the current number (44), with similar terms and conditions of current contracts as specified in the Operating Plan. Temporary closures and/or restrictions would continue to be used by management to address limited parking or resource impacts. With the exception of Glen Creek Trailhead, the configuration of parking at each trailhead would remain the same.

Resource monitoring, including the resource monitoring plan described in the Purpose and Need (Section 2.1.3), would continue to occur in the backcountry. Informal and formal monitoring occurs in the backcountry. Informal monitoring occurs when a backcountry ranger or subject matter expert travels through the backcountry. Resource monitoring described under Section 2.1.3 would occur under this alternative.

2.1.5 Alternative C – Commercial Stock Outfitter Use with Monitoring-Based Management (Preferred Alternative)

Alternative C proposes to issue commercial saddle and pack contracts up to the current number (44). Under this alternative, the terms and conditions of the commercial stock outfitter contract or operating plan may be adjusted and modified (including contract length) based on the results of resource monitoring data and adaptive management decisions. Temporary closures and/or restrictions may be used by management to address limited parking or resource impacts. With the exception of Glen Creek Trailhead, the configuration of parking at each trailhead would remain the same. Under this alternative, the park would retain the ability for flexible management options based on resource monitoring (described below). Trails, campsites, and stock use areas would be monitored to assess conditions and impacts to resources. A monitoring-based management strategy would allow park managers to implement additional management options, as needed, if trails cannot be adequately maintained in the future. For example, park managers could choose to further limit stock use (number per day or year) or close trails to stock use permanently or seasonally. The intent of these possible management actions is to consider and weigh all impacts to trails, natural and cultural resources, visitor experience, and park operations to determine future actions. The goal of this strategy is to address the objectives outlined in Section 1.3 and to protect park resources.

The proposed action would include management actions that would allow limits to be placed on areas of high use or where impacts occur. As stated in Management Policies Section 4.1, "Natural systems in the national park system, and the human influences upon them, would be monitored to detect change. The Service would use the results of monitoring and research to understand the detected change and to develop appropriate management actions." The results of the monitoring would also be used for future backcountry planning. The operating plan would be used to institute changes to commercial stock use as deemed appropriate. If necessary, there is also the potential that monitoring would lead to a contract modification.

In addition to monitoring, this alternative could include:

- Hiker trail counts-There is a lack of data regarding hiker trail use park-wide. Day use was monitored in 1992 and individual trails have been monitored intermittently since then, but the increase in park visitation and unknown shifts in use patterns requires updated data. This data would help park managers analyze impacts and develop solutions for mitigating those impacts.
- Private day stock use counts-Currently private day stock use is not counted and the exact amount of use is unknown. Anecdotal information is available, particularly which areas are used more, but actual numbers are not known.
- Reservation system-A reservation system could be instituted for day trips in heavily used areas that would be based on resource impacts and parking availability.
- Installation of hitching posts where needed
- Designated stock trailer parking and vehicle parking at heavily used areas
- Closures of trailheads, trails, and/or campsites if conditions warrant (i.e., wet conditions, bear restrictions, overuse, etc.)
- Establish limits to the number of stock use days in heavily used areas
- Issuing contracts with a 5-10 year contract term
- Providing information to visitors on horse use in the park by signing trails as "Heavy Horse Traffic" and by ensuring a "stock-free" list of trails is available to visitors at backcountry permit offices and visitor centers.

2.2 Mitigation Measures

The following mitigation measures are part of the Operating Plan (Appendix C) and were developed to minimize the degree and/or severity of adverse effects and would be implemented during execution of the chosen action alternative, as needed:

- A guide certification program for stock outfitters was adopted in 1988 to ensure quality visitor services, improve information exchange between the park and outfitters, and provide for safety of operations. Not every staff member must be certified, but there must be one certified guide on each trip. Guide certification is valid for two years. From 1988 through 2009, the guide certification was conducted in-person by park staff. Certification sessions were held in early June as part of the annual meeting between commercial stock outfitters and NPS staff. In some years, a make-up certification session was offered for guides unable to attend the initial certification. Beginning in 2010, the in person guide certification was discontinued and changed to a self-certification format. Guide certification presentations were made available to outfitters via computer media. Commercial stock outfitters have the responsibility of ensuring their staff reviews the certification program and are familiar with the Operating Plan and NPS regulations required for leading trips with stock in YNP. The guide certification program covers the Operating Plan, park regulations, and leave-no-trace stock handling and retention requirements specific to YNP. The guide certification program is distributed to outfitters via DVD or online.
- The following must be reported as soon as possible to a park ranger or to the Park Communication Center: fatalities, employee or visitor injuries requiring more than minor first aid, motor vehicle accidents resulting in property damage, personal injury or death, incidents resulting in injury or property damage exceeding $300, incidents adversely affecting the park's resources or damage to government property, and any known or suspected violation of the law.
- One outfitter on each trip within the park must be trained in First Aid and CPR and possess current certifications. At a minimum, a basic first aid kit will be carried by each party.
- Outfitters and their clients must abide by the Food Storage and Food Sanitation Guidelines. Any food or other bear attractants may not be left unattended or must be properly stored.
- Each outfitter must carry a minimum of one can of bear spray. Bear spray for clients is recommended.
- Prior to the trip, the outfitter must provide all clients with an orientation that emphasizes safety, bear habitat, Leave No Trace principles, park rules and regulations, and the nature and demands of the trip.
- All vehicles, trailers, and equipment must be washed before entering into the park.
- All hay and forage for stock must be covered or bagged before entering the park.
- All loose hay, straw, and other plant products must be removed from beds of vehicles and interiors of open stock trailers prior to entering the park. Certified weed-free hay is allowed in the front-country.
- Weed seeds from stock must be removed by thorough brushing and cleaning of hooves prior to transport into the park.
- The outfitter must ensure that all clients stay a distance of at least 100 yards from bears and wolves and a distance of 25 yards from bison, elk, and other animals.
- Feeding, touching, teasing, or intentionally disturbing or injuring wildlife is prohibited.
- Bear observations must be reported to the Central Backcountry Office or a park ranger as soon as possible.

- The concessioner outfitter is responsible for informing its employees and clients of park regulations and assuring compliance. The concessioner outfitter will not allow employees or clients to disturb or remove any historic and/or cultural artifacts in the park including arrowheads, obsidian fragments, or other cultural resources such as glass, metal, or wood objects. Rocks, flowers, plants, parts or plants or animals (alive or dead), and other natural resources shall not be disturbed or removed.
- The outfitter will comply with all applicable laws, regulations, and terms and conditions of the contract and the Operating Plan for Guided Saddle and Pack Stock Tours (Appendix C).
- All motorized vehicles and trailers used by outfitters in the park shall be maintained in a safe operating condition according to appropriate federal and state regulations.
- The outfitter shall park their vehicles in an area approved by the NPS and in such a manner as to afford sufficient space for other users.
- All trailers must be cleaned of manure before stock is loaded for a trip into the park.
- The outfitter is required to comply with federal regulations regarding the transport of stock and may be required to provide proof of testing and necessary immunizations of stock, as required by state, federal, and county agencies.
- Prior to the beginning of each season, the outfitter is required to submit to the Central Backcountry Office valid proof of a negative Coggins test performed within the last 12 months for each equine entering the park.
- Outfitter staffing must be adequate to provide the service advertised, to minimize impacts on the resource, and to provide for the safety and enjoyment of the clients. Minimum number of staff per trip: 1-10 stock =1 staff, 11-20 stock = 2 staff, 21-25 stock = 3 staff.
- Groups using the same trail will be spaced a minimum of 15 minutes apart. When two groups pass each other, one group should move off the trail and remain still until the other group has passed. Riders must slow their horses to a walk when approaching and passing persons on foot.
- The outfitter shall provide the Central Backcountry Office advance notice of all trips into the park and any changes or cancellations to their backcountry camping reservations.
- Riders on day rides are required to use Service-designated trails. Groups, including the guide, will travel in single file on designated trails. Only one person will be allowed on each horse. Off-trail rides will **not** be permitted for routine and repetitive rides using the same area. Off-trail travel is prohibited except under the following circumstances: 1.) For rides whose primary purpose is fishing, riders are allowed access to the stream/lake. 2.) Travel is limited to the most direct route from the designated trail to the fishing location. 3.) When on an overnight backcountry trip, users may take off-trail day trips from their backcountry campsite. With advanced approval from the Central Backcountry Office for occasional, non-repetitive rides.
- To reduce the chance of bear-human conflicts near carcasses of stock (horses, mules, llamas) that die near park backcountry trails, campsites, and trailheads, the concessioner outfitter must move the carcass at least 1/2 mile from any campsite, trail, or trailhead and 200 yards from any water source. The concessioner outfitter shall notify the Central Backcountry Office and the local backcountry ranger of the location of dead stock as soon as possible. The concessioner outfitter is responsible for paying any costs associated with the removal/disposal. If an animal dies within the park, it is the concessioner outfitter's responsibility to remove the carcass from the park or make arrangements for its proper disposal as soon as possible.

2.3 Alternatives Considered and Dismissed

The following alternatives were considered for project implementation, but ultimately dismissed from further analysis. The reasoning for dismissal is provided in the following alternatives description.

- **Comprehensive plan for all trail-based or all backcountry recreation-** The scope of this EA is commercially guided saddle and pack use. The data from monitoring in the preferred alternative would be used for future backcountry planning efforts. The effects from other use (i.e., human and non-human) are evaluated in the cumulative effects section of each resource topic. Non-commercial use is outside of the scope of this document and was dismissed.
- **Designated trailheads for stock use-** The park has designated stock parking at Glen Creek and Soda Butte. This arrangement has helped with parking congestions for high use areas. The park does not wish to increase impacts by creating duplicate trailheads in order to separate hikers and stock. In some cases a parking area can simply be divided by fencing (i.e., Soda Butte parking area) to help ameliorate the issues. Designating a parking area for stock or hikers, or dividing a parking area is an administrative decision that would happen when conditions warrant. Therefore it was dismissed as an alternative to be carried through the document.
- **Hardening of trail surfaces-** The hardening (i.e., gravel, asphalt) of trail surfaces may reduce sediment runoff in the long-term, but would increase impacts in the short-term. This alternative would also increase maintenance costs, at least in the short-term. Impacts to soils and water quality are minor, especially when added to impacts occurring from native species (i.e., bison, elk, etc.). The combination of impacts and initial cost caused this alternative to be dismissed.

Table 2-1 How Each Alternative Meets Project Objectives

Objectives	Alternative A	Alternative B	Alternative C
To continue to provide an opportunity for a unique visitor experience, particularly for those visitors who could not experience the backcountry otherwise.	Since commercially guided saddle and pack tours would no longer be available, this objective would not be met.	Issuing concessions contracts and the availability of commercially guided saddle and pack tours would provide a unique visitor experience and meet this objective.	Issuing concessions contracts and the availability of commercially guided saddle and pack tours would provide a unique visitor experience and meet this objective.
Maintain appropriate levels of commercial saddle and pack stock use in the park that would not result in an increase in degradation of resources.	This alternative would not maintain any level of commercial saddle and pack use in the park. This alternative would not meet this objective.	This alternative would maintain the current level of commercial saddle and pack stock use in the park. This alternative would meet this objective.	This alternative would maintain the current level of commercial saddle and pack stock use in the park, but would allow the closure of trails, trailheads, or implement a reservation system that would benefit natural and cultural resources. This alternative would meet this objective.
Comply with concessions law, the National Environmental Policy Act, the 2006 NPS Management Policies, and all appropriate rules and regulations.	Since no action would be taken, compliance with laws, rules, and regulations would occur. This alternative would meet this objective.	This alternative would comply with all laws, rules, and regulations. This alternative would meet this objective.	This alternative would comply with all laws, rules, and regulations. This alternative would meet this objective.
Maintain level of commercial stock use in the recommended wilderness at the minimum necessary for public education and visitor enjoyment.	This alternative would not maintain any level of commercial saddle and pack use in the park. This alternative would not meet this objective.	This alternative would continue commercial saddle and pack use for public education and visitor enjoyment. Monitoring would be used to identify ongoing or potential impacts and limits on use are a management option. This alternative would meet this objective.	This alternative would continue commercial saddle and pack use for public education and visitor enjoyment. Monitoring would be used to identify ongoing or potential impacts and limits on use are a management option. Additional data collection would be gathered under this alternative that would be used for future management decisions. This alternative would meet this objective.

Table 2-2 Environmental Impact Summary by Alternative

Impact Topic	Alternative A (No Action)	Alternative B	Alternative C (Preferred)
Soils	Short- and long-term, negligible, beneficial impacts to soils.	Short- and long-term, minor, adverse impacts to soils.	Limits placed on sensitive areas (i.e., wetlands, alpine meadows) could have a negligible beneficial effect. Overall, Short- and long-term, minor, adverse impacts to soils.
Vegetation and Wetlands	Short- and long-term, minor, beneficial impacts to vegetation and wetlands.	Short- and long-term, minor to moderate, adverse impacts to vegetation and wetlands.	Limits placed on sensitive areas (i.e., wetlands, alpine meadows) could have a negligible beneficial effect. Overall, Short- and long-term, minor, adverse impacts to vegetation and wetlands.
Water Quality	Short- and long-term, negligible, beneficial impacts to water quality.	Short- and long-term, negligible, adverse impacts to water quality.	Limits placed on sensitive areas (i.e., wetlands, stream crossings) could have a negligible beneficial effect. Overall, Short- and long-term, negligible, adverse impacts to water quality.
Wildlife	Short- and long-term, negligible, beneficial impacts to wildlife.	Short- and long-term, negligible to minor, adverse impacts to wildlife.	Short- and long-term, negligible to minor, adverse impacts to wildlife.
Special Status Species	Short- and long-term, negligible, beneficial effects to special status species	Short- and long-term negligible to minor adverse impacts to special status species with the potential for a minor adverse effect on the grizzly bear.	Short- and long-term negligible to minor adverse impacts to special status species with the potential for a minor adverse effect on the grizzly bear.
Wilderness	Short- and long-term, minor, adverse and beneficial impacts to wilderness.	Short- and long-term, minor, adverse and beneficial impacts to wilderness.	Short- and long-term, minor, adverse and beneficial impacts to wilderness.
Archeology	Short- and long-term, minor, beneficial impacts to archeological resources.	Short- and long-term, minor, adverse impacts to archeological resources.	Short- and long-term, negligible to minor, adverse impacts to archeological resources.
Socioeconomics	Short- and long-term, minor, adverse impacts to socioeconomic resources.	Short- and long-term, minor, beneficial impacts to socioeconomic resources.	Short- and long-term, minor, beneficial impacts with the possibility of negligible adverse impacts to socioeconomic resources.
Visitor Experience	Long-term, minor to moderate, adverse impacts to visitor experience.	Long-term, minor, beneficial impacts to visitor experience.	Long-term, minor, beneficial impacts to visitor experience.
Park Operations	Short- and long-term, negligible, beneficial impacts to park operations.	Long-term, negligible, adverse impacts to park operations.	Long-term, negligible, adverse impacts to park operations.

2.4 Environmentally Preferable Alternative

According to the Department of the Interior regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative "…that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative."

It has been determined that the No Action Alternative, Alternative A, would be the environmentally preferable alternative. Alternative A would have the lesser degree of adverse and increased beneficial effects to all resources except visitor use and experience and socioeconomics, which would be minor to moderate, short- and long-term and adverse. Not issuing concessions contracts for commercial saddle and pack use would remove approximately 9,500 head of stock from the park each year. However, if commercial saddle and pack use was not available to the public, Xanterra stock use may increase, mitigating some of the beneficial effects.

Alternative B and C would continue commercial saddle and pack use and the adverse impacts associated with stock on the landscape. Under these alternatives, there would be beneficial effects to visitor use and experience due to commercial saddle and pack trips being available to the public. Although there are increased adverse impacts resulting from Alternative B and C, the impacts are mainly negligible or minor due to monitoring and adherence to the Operating Plan and contract. Because of the impacts associated with Alternative B and C, it is not the environmentally preferred alternative

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the proposed project. Direct, indirect, and cumulative effects are analyzed for each resource topic carried forward. Potential impacts are described in terms of type, context, duration, and intensity. General definitions are defined as follows, while more specific impact thresholds are given for each resource at the beginning of each resource section.

- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
  - *Beneficial*: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
  - *Adverse*: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
  - *Direct*: An effect that is caused by an action and occurs in the same time and place.
  - *Indirect*: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.
- **Context** describes the area or location in which the impact would occur. Effects may be site-specific, local, regional, or even broader.
- **Duration** describes the length of time an effect would occur, either short- and/or long-term:
- **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic analyzed in this EA.

Cumulative Impact Scenario

The CEQ regulations which implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7).

Cumulative impacts were determined by combining the impacts of the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at YNP and, if applicable, the surrounding region. The geographic scope for this analysis includes actions both, within and outside of Yellowstone's boundaries. The temporal scope includes projects within a range of approximately ten years. Given this, the following projects were identified for the purpose of conducting the cumulative effects analysis, listed from past to future:

- **Park-wide Road Improvement Plan (1992)** – This plan proposes to preserve and extend the service life of principal park roads, enhance their safety, and continue access to Yellowstone National Park and its features.

- **Wireless Communications Services Plan (2008)** – This plan proposes to provide a framework for establishing wireless communication services park-wide.

- **Native Fish Management Plan (2010)** – This plan proposes to conserve native fish from threats of non-native species, disease, climate induced environmental change, and provides guidance and an adaptive framework for managing fisheries and aquatic resources.

- **Tower-Roosevelt Comprehensive Plan (2010)** – This plan will alter or improve visitor services, facilities (buildings, roads, and paved parking areas), and utilities while preserving the distinct and significant rustic western camp character and resources in the Tower-Roosevelt area. This plan does not increase the footprint of the developed area.

- **Lake Comprehensive Plan (2012)** – This plan will alter or improve visitor services, facilities, buildings, roads, paved parking areas, and utilities while focusing on protecting the developed area by managing growth and development.

- **Invasive Vegetation Management Plan (2013)** – This plan provides guidance to prevent, eradicate, and control the spread of non-native plants through the use of manual and herbicide methods.

- **Bechler Administrative Area Improvement Plan /EA (ongoing)**- Actions proposed in this EA would improve visitor experience and park operations by addressing day use and overnight parking, circulation, employee housing, utilities, and telecommunication functions. The EA evaluates three alternatives; alternative A - no action; alternative B – construction of single or multiple employee housing units to accommodate six park employees, and construction of a new visitor contact station; alternative C – construction of a single multiplex employee housing unit to accommodate six park employees and adaptive reuse of the existing visitor contact station.

- **Hazard Fuel Reduction in Developed Areas (ongoing)** – Many developed areas in Yellowstone have been evaluated and treated for hazard fuel reduction projects, and all of the developed areas must be monitored. Tree canopy density needs to be modified to stop crown fires, which may initially take several years to accomplish through treatment. A quality fuel reduction project will make allowances for wind-throw, and over the course of a few years of conservative treatment, the final canopy spacing will be achieved. Accumulated dead and down fuels will be removed using chainsaws, chippers and possibly some small, minimal footprint types of machinery. Fuel that is not chipped and removed may be piled and burned when it is safe and appropriate to do so.

- **Electric Transmission/Distribution System Communication and Automation Plan (ongoing)** - YNP in conjunction with NorthWestern Energy (NWE), one of the electricity providers for the park, propose a number of upgrades to improve the reliability, safety, and overall service quality of electrical power distribution to the NPS, concessioners, and visitors. Infrastructure upgrades would occur at seven existing substations located within the park, and one repeater site outside the park. The project proposal also includes a communication system for use by NWE.

- **Trail Maintenance Projects (ongoing)** – YNP rehabilitates or relocates 10-15 sections of trail per year. This action results in short-term adverse impacts to soils, vegetation, visitor use, and wildlife, while resulting in long-term benefits to soils, vegetation and visitor use.

- **NEON (future) -** The National Ecological Observatory Network (NEON) is a continental-scale monitoring platform for discovering and understanding impacts of climate change, land use change, and invasive species on ecology. NEON would gather long-term data on ecological responses of the biosphere to changes in land use and climate, and on feedbacks with the geosphere, hydrosphere, and atmosphere. It would consist of distributed sensor networks and

experiments, linked by advanced cyber infrastructure to record and archive ecological data for at least 30 years. The Yellowstone Northern Range site has been selected by NEON, Inc. as one of 20 Core Wildland Sites throughout the country. Core NEON sites would require permanent scientific monitoring equipment. A full proposal would detail what types and where such infrastructure is needed. Any infrastructure proposals would follow the guidelines determined through this plan and additional compliance might be required.

3.1 Soils

Affected Environment

Soil is an integral component of most terrestrial ecosystems. The physical, chemical, and biotic properties of soil are important in determining function, productivity, and other characteristics of these ecosystems. The three components often interact in complex ways. Important physical properties of soil include texture, composition (sand/silt/clay), bulk density, porosity, structure, infiltration, temperature, and water repellency. Chemical processes include characteristics, processes or reactions derived from the chemical composition or reactions occurring in the soil. Biotic properties relate to functions or attributes of soils that reflect the role of living or dead organisms. Important biotic influences include many relationships between plants and microorganisms that enhance uptake of nutrients while in other cases soil organisms are responsible for diseases.

More than 80 soil types and 6 soil orders found in the park have been described (Rodman et al. 1996). Most of these types fall into three soil orders: Inceptisols, Mollisols, and Alfisols. Inceptisols, which have weakly developed soil profiles, are the most common soil order in the park and dominate within the caldera in the central and southwestern parts of the park. Mollisols have thick, dark surface horizons and are rich in organic matter. They occur primarily in grasslands in the park, but also in forests across the north and east boundaries of the park. Alfisols have thin surface horizons and subsoil accumulations of clay. They occur throughout the forested north and east parts of the park and dominate in areas weathering from sedimentary rocks.

With over 1,000 miles of trails, all soil types have been impacted to some degree. Trails in the park have varying degrees of erosion, compaction, and removal of mineral soil. The degree of trail deterioration is determined by characteristics of the trails, its environment and the use of the trail (Cole 1987). They vary in the level of use, type of use, location in the landscape, slope, design of the trail and other localized trail conditions. Erosion and compaction is most prevalent in areas where trails are located in wetlands, follow and cross drainage and stream crossings, and where heavier load trail users frequent. The trails are continually surveyed for damage and unsafe conditions. On average, the park rehabilitates or reroutes 10-15 trail sections/segments per year.

Most park trails were initially established as fire prevention or cavalry patrol routes early in the park's history. In 1880, the park contained 312 miles of trails and by 1952, it listed 1,145 miles of trails in its Master Plan (Rosenberg, 2013). Many of the trails have been designed to minimize erosion, and drainage structures are constructed and maintained to channel water off the tread into surrounding vegetation before it damages the trail, or reaches waterways. However, problems occur when the trail interrupts natural drainage or areas have flooded. When trails become wet or muddy, trail users (including stock and wildlife) often utilize the side of the trail, thus widening the exposed soil of the tread.

Designated backcountry campsites have been designed to concentrate rather than disperse use and are mostly flat and where possible sited away from water sources. YNP has 293 backcountry campsites. The backcountry campsites were surveyed by NPS personnel in 1992 and again in 2007 for general condition, including bare ground, bare roots, vegetation trampling and the presence of non-native plant species. In 1992, 177 campsites were surveyed and in 2007, 290 campsites were surveyed. Of the campsites that were surveyed both years, the average bare ground was 729 ft^2 in 1992 and 500 ft^2 in 2007. The average bare ground for all campsites surveyed in 2007 was 440 ft^2. Mitigation measures such as fire pits and hitchrails have been installed at campsites and some trailheads to localize the impacts to soils and vegetation (Figure 3-1).

Figure 3-1 Hitch Rails at Nine Mile Trailhead

Some soil erosion is occurring at watering locations for stock. Stock disturbs stream banks and riparian areas at watering spots, near trail crossing areas and campsites. Unavoidable trampling occurs at these spots, exposing bare soil and causing alterations of the stream banks. This erosion is not affecting water quality beyond the isolated, local areas due to the relatively small size of the area and infrequent occurrence.

Backcountry users utilize existing system trails to access campsites, and local social trails in and around the camps. Users compact and displace soil in the trail tread as they traverse the trails. The trails are designed to minimize erosion, and drainage structures are constructed and maintained to channel water off the tread into surrounding vegetation before it damages the trail, or reaches waterways. Users also create braided trails when they leave the established tread to avoid wet areas or obstacles in the trail. These isolated spots are addressed through trail rerouting or trail structure construction as funding allows.

Methodology and Intensity Level Definitions

The methodology used for assessing impacts to soils was derived from available information and park staff. For purposes of analyzing potential impacts to soil resources, the intensity of impacts is defined as follows:

Impact Intensity	Impact Description

Negligible	Soils would not be affected by compaction, trampling, erosion, removal, etc., or the effects to soils would be below or at the lower levels of detection. Any effects to soils would be slight with no measurable or perceptible changes.
Minor	Effects to soils due to compaction, trampling, erosion, removal, etc., would be detectable, small, and localized. Changes would not be expected to be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	Effects to soils due to compaction, trampling, erosion, removal, etc., would be readily apparent and result in a long-term change to the soils character, including erosion patterns in a localized area. Mitigation measures, if needed to offset adverse effects, could be extensive but would likely be successful.
Major	Effects on soils due to compaction, trampling, erosion, removal, etc., would be readily apparent, substantially change the character of the soils and erosion patterns over a large area, and likely would be permanent. Extensive mitigation measures would be needed to offset any adverse effects and their success could not be guaranteed.

3.1.1 Impacts of Alternative A (No Action)

There would be no commercial saddle and pack trips with implementation of Alternative A, so commercial outfitters would no longer have impacts on soils, including erosion, soil compaction, trampling from grazing, or at stream crossings.

Soil compaction, erosion and trampling at established backcountry campsites would continue because other users and wildlife would continue to use the backcountry campsites. The size of the barren areas could decrease due to the overall decrease in total use and more specifically, commercial stock use. This would reduce the total amount of compacted and eroded soil associated with backcountry campsites. The amount of compacted soil on trails may increase or decrease slightly, depending on use. Several studies (Weaver and Dale 1978; Summer 1986; Wilson and Seney 1994; DeLuca et al. 1998) found that even minimal use of horse use resulted in greater impacts to soils, vegetation and trail conditions than from hikers. The impacts were due to the more weight per unit area of a horse and rider compared to a person. According to Liddle (1997) the pressure per unit area of a horse and rider may be ten times greater than a person hiking.

There could be a reduction in impacts from grazing, both in stock containment areas within backcountry camps, and in areas currently used by loose grazing outfitted stock, because of the reduction in the number of saddle and pack stock across the analysis area. The change would be negligible, however, since the current impacts are minimal and grazing from animals and private and administrative stock would continue.

Erosion at trail stream crossings would continue, and based on current levels of use, is expected to decrease slightly due to the reduction of stock using the trail system.

Because of the reduction in stock in the backcountry, Alternative A would have negligible, short- and long-term benefits to soils.

Cumulative Effects: Cumulative impacts on soils are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in YNP. Public use and other commercial use activities would continue in backcountry camp areas along with social trails and informal pullouts. Consequently the total square feet of compacted bare mineral soil in camps and trails would

remain essentially the same. Ongoing administrative activities such as road reconstruction and maintenance, backcountry operations, facilities maintenance and construction, and hazard fuels reduction projects would continue to have adverse effects on soil resources in the park. Road maintenance activities would require disturbance and removal of soil by heavy equipment operation. Trail maintenance would continue, including cleaning and reconstructing drainage structures as needed to minimize erosion and water channeling on trails.

Wildfires would occur in the future. High severity fires in some landform groups could increase debris slides events and flooding. Fire suppression activities such as fire line construction with mechanized and manual equipment and use of chemical and water drops would also continue. Fire lines would be rehabilitated, but some erosion would occur before the vegetation recovers and the organic litter layer reestablishes. Wildfires could damage soil, but there would be no cumulative on-site soil disturbances from recreation or management actions that would adversely impact natural nutrient or hydrologic cycles that could lead to off-site effects. On-site nutrient cycles would not be altered to the point that the vigor of adjoining vegetation communities would be reduced. In addition, on-site soil compaction, displacement, or erosion would not alter natural soil hydrologic process and lead to accelerated erosion and sedimentation into streams since effects from recreation would be small and isolated, and management actions would be designed with soil protection measures.

The impacts of Alternative A in conjunction with the past, present, and reasonably foreseeable future actions would be minor, short- and long-term adverse.

3.1.2 Impacts of Alternative B

Under Alternative B, contracts would be issued for up to 44 commercial saddle and pack stock outfitters. This alternative is a continuation of the current ongoing action and the impacts would be similar to those listed under the affected environment section.

Impacts from trail use by horses, hikers, and wildlife both contribute to soil compaction and erosion, loss of organic litter, loss of ground cover vegetation, loss of species, trail erosion and widening, and the potential spread of weeds and pathogens into native vegetation. However, the severity of the impacts between the two can differ greatly. Compared to hikers, the weight of horses can cause increased damage to soils and vegetation (Weaver and Dale 1978; Liddle 1997). Trampling causes soil compaction and shearing and dislodges soil particles. Compaction reduces the space between soil particles and decreases water infiltration and oxygen diffusion (Thurow 1991). Shearing occurs when hooves cut through the soil, dislodging soil and severing plant roots (Vallentine 1990). These actions increase erosion and reduce plant growth (McClaran 1993).

As stated above, the square footage of bare ground at campsites has declined since 1992. Based on the data presented in chapter one on historical use, the amount of bare ground would be expected to remain steady. Commercial saddle and pack outfitters would continue to utilize existing system trails to access campsites, and local social trails in and around the camps. This use would compact and displace soil in the trail tread. Some soil erosion would continue to occur at stock watering and crossing locations as well as campsites, trailheads and trails.

The trails are designed to minimize erosion, and drainage structures are constructed and maintained to channel water off the tread into surrounding vegetation before it damages the trail, or reaches waterways. Users also create braided trails when they leave the established tread to avoid wet areas or obstacles in the trail. These isolated spots are addressed through trail rerouting or trail structure construction as funding allows. The use of designated trails minimizes the potential impacts to undisturbed soils. Continued commercial stock use would result in compaction and displacement of soil in the trail tread, braided trails, and social trails as a result of both overnight and day rides. These isolated spots would be minimized

because of the off-trail day ride restriction addressed in the mitigation measures in Section 2.1.3, the Operating Plan (Appendix C) and through annual trail rerouting or trail structure maintenance and construction.

Saddle and pack stock outfitters would continue to use a combination of loose grazing and stock containment with the effects similar to the existing condition. Soil in stock containment areas within camps would be compacted and displaced, but there would be little to no erosion from these areas because they are relatively flat and surrounded by ground vegetation that would capture any eroding soil. Areas where the stock loose graze would have minor soil impacts because of dry soil and vegetative cover. Trampling is most severe where stock are restrained in small areas for long periods (Cole 1983). Stock traveling through wetlands to reach grazing areas would compact and displace the soil within the trails, but impacts to soils would be reduced somewhat by the requirement to use established travel routes. Stock could still travel outside the established routes, so some soil damage could occur. These impacts would be negligible and isolated to change conditions on the ground, and would approximate natural processes. Grazing would not prevent plant establishment or growth outside the stock containment areas.

Soil effects at trail stream crossings would be similar to current conditions. Most stream banks are vegetated and/or rocky and stable. Alternative B would affect stream banks but would not appreciably degrade stream banks at existing stream crossings or channel bedding characteristics since saddle and pack stock outfitter-guides would be restricted to using existing campsites and existing trails. There are 1,242 stream crossings in the Yellowstone backcountry. The continued use of these stream crossings would not degrade stream reaches and is expected to be similar to historic levels.

Some soil erosion from saddle and pack stock use would continue, so soil erosion would occur at some of these wet soil/meadow watering areas. The erosion would not affect water quality beyond the isolated, localized areas due to their relative small size and infrequent occurrence.

The *Mitigation Measures* listed in Chapter 2 would avoid or reduce impacts to soil. Continued inclusion of these *Mitigation Measures* in the annual Operating Plan would increase effectiveness and compliance.

Overall, Alternative B would have minor, short- and long-term adverse impacts on soil conditions in campsites, trails, trailheads, and at stock watering and grazing locations.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to soils.

3.1.3 Impacts of Alternative C (Preferred Alternative)

Under Alternative C contracts would be issued for up to 44 commercial saddle and pack stock outfitters and monitoring-based management actions would be used if warranted to limit impacts to resources. This alternative would have similar impacts as those listed in Alternative B.

If a trail was closed or limits placed on commercial saddle and pack outfitters, other nearby trails could be used. However, a closure or limit on use could benefit sensitive areas (i.e., wetlands, alpine meadows). As stated by Hammit and Cole, the primary effect of trampling is erosion and although trail treads often change-either deepening through erosion or filled in by deposition-trail systems as a whole usually exhibit a relatively steady state (1998). Stock use on low-use trails, steep trails, trails that pass through wet meadows, or on trails that are maintained infrequently can have increased impacts, compared to hikers (Hammit and Cole, 1998). The initial impacts resulting from travel on untrodden soil are the most damaging, with the amount of compaction decreasing with the amount of use (McClaren and Cole, 1993).

Limits on these types of trails, off-trail travel, or closures of social trails could have a beneficial effect on soils.

In addition to the impacts described in Alternative B, which result from use, impacts resulting from implementation of the proposed management actions would be negligible to minor, short- and long-term adverse. Overall, Alternative C would have minor, short- and long-term adverse impacts on soil conditions in campsites, trails, trailheads, and at stock watering and grazing locations.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to soils.

3.2 Vegetation and Wetlands

Affected Environment
Vegetation and wetlands are addressed together in this section because a description and analysis of potential impacts on wetlands typically involves a discussion of wetland habitat, which consists of the various vegetation communities found within the parks.

Yellowstone National Park contains diverse vegetation as a result of the extreme topographic relief, differing soils, varied slope and aspect, and range of microclimates (Despain, 1990). Yellowstone's vegetation is composed primarily of typical Rocky Mountain species. The five generalized vegetation types in the park are: montane forests, sagebrush-steppe, alpine meadows, wetlands/riparian, and hydrothermal communities. Below is a description of each of these vegetation types.

Montane Forests
Approximately 80 percent of Yellowstone is covered by forests and the majority of these forests are dominated by lodgepole pine (*Pinus contorta*) Lodgepole pine is found in a variety of successional stages at elevations between 7,500 and 9,000 feet. Other tree species in Yellowstone National Park include subalpine fir (*Abies lasiocarpa*), Engleman spruce (*Pices englemanii*), and douglas fir (*Pseudotsuga menziesii*). Whitebark Pine (Pinus albicaulis) occurs at high elevations and is covered under Special Status Species in this EA. These communities cover 1.4 million acres of the park.

Sagebrush-Steppe
Sagebrush-steppe vegetation is found primarily at the lower elevations, in the northern range of Yellowstone and is dominated by sagebrush (*Artemisia spp*.) and other shrubs. Idaho fescue (*Festuca idahoensis*), needle-and-thread (*Hesperostipa comata*), Sandberg bluegrass (*Poa secunda*), or bearded wheatgrass (*Elymus caninus*) are common, either mixed with the sagebrush or as open meadows. Numerous wildflowers can be found throughout (Despain, 1990).

Alpine Meadows
This is a diverse group of high-elevation open areas, including alpine tundra which occurs above 10,000 feet. Some types are dominated by a thick turf of alpine grasses and forbs, while others are dry and rocky with a more open aspect. Common species include sheep fescue (*Festuca ovina*), timberline bluegrass (*Poa glauca*), and lanceleaf stonecrop (*Sedum lanceolatum*) (Despain, 1990).

Wetlands and Riparian Areas
Wetlands cover 357 square miles of Yellowstone and include lakes, rivers, ponds, streams, seeps, marshes, fens, wet meadow, forested wetlands, and hydrothermal pools. Willows (*Salix spp*.), aspen, and

in some places cottonwood (*Populus spp*.) are characteristic of streamside riparian vegetation. Three wetland types can be found in the park. 44 percent are lakes and ponds larger than 20 acres or have water deeper than 6.6 feet at low water; 4 percent are rivers and streams; 52 percent are palustrine. Palustrine wetlands are described by either the dominant vegetation form or, if vegetation covers less than 30 percent of the substrate, by the physiography and composition of the substrate. Wetlands and riparian areas in Yellowstone provide essential habitat for the rare plants, reptiles, amphibians, and numerous insects, birds, mammals and fish in the park. Approximately 38 percent of the park's plant species are associated with wetlands, with 11 percent only growing in wetlands.

Hydrothermal Communities

Plant communities have developed in the expanses of thermally heated ground. Many of the species found in the geyser basins tolerate different conditions, and grow all over the western United States. Other species, are typical of the central Rockies, or are endemic to the region.

Other Vegetation in the Park

More than 1,300 native plant species and an additional 217 non-native plant species can be found in Yellowstone. Yellowstone is home to three endemic species: Ross's bentgrass (*Agrostis rossiae*), Yellowstone sand verbena (*Abronia ammophila*), and Yellowstone sulfur wild buckwheat (*Eriogonum umbellatum var. cladophorum*). There are also 97 rare plant species within the park.

Nonnative plant species are prioritized according to the threat they pose to park resources and the prospects for successful treatment. Some infestations can be eradicated if the species is treated when the outbreak is still small; other species such as spotted knapweed are so common that stopping them from spreading is the primary goal. This strategy has helped prevent high priority invasive species from moving into backcountry areas where control is more difficult.

Of the 20,291 acres surveyed on foot in 2011, about 4,600 acres were affected by nonnative vegetation. Based on treatment priorities, 96 acres were treated and 9 acres were treated twice. Plants were physically pulled on 6 acres; the rest were treated using approved herbicides. Most of the 44 invasive plant species targeted for treatment are listed by the states of Idaho, Montana, and/or Wyoming as "noxious weeds," which means that they are considered detrimental to agriculture, aquatic navigation, fish and wildlife, or public health. Roadways and developed areas comprised 75% of the treatment acres and the remaining 25% occurred along the park's trails and in the backcountry. Prevention efforts include control of construction materials entering the park, equipment inspections at park entrances, allowing only certified weed-free hay to be transported through the park, covering or bagging hay transported through the park, restrictions on the use of hay in the backcountry, and planting native species where ground disturbance has occurred. During the 2007 campsite survey, 107 of the 290 sites surveyed had nonnative plants present. Eight species of nonnative plants were found, Canada thistle being the most prevalent. Of those 107 campsites, 38 were open to stock use.

A combination of natural and human disturbances has altered native vegetation at trailheads, along established and social trails, backcountry campsites, and stock grazing areas. Many of these disturbances has resulted in the trampling of vegetation, reduction of plant growth in these areas, a change in species composition, and contributed to the establishment of non-native plant species. Use inevitably results in compaction of soils and vegetation on trails and at backcountry campsites. Soil compaction may result in increased runoff and in defoliation of vegetation at sites. Grazing can lead to changes in species composition and reduce biomass production, plant size and seed output (Briske 1991, McClaran and Cole 1993).

As stated above in the soils section, 177 backcountry campsites were surveyed in 1992. In 2007, 290 campsites were surveyed. Of the campsites that were surveyed both years, the average bare ground was

729 ft^2 in 1992 and 500 ft^2 in 2007. The average bare ground for all campsites surveyed in 2007 was 440 ft^2.

Stock users use two methods for caring and retaining stock on overnight trips in the backcountry: stock containment and loose grazing. Stock containment refers to tying stock to trees for short durations, tying to hitch rails or high lines, or picketing stock. Loose grazing is a technique where stock is let loose to graze. YNP suggests confining stock as little as possible and encourages the use of hobbles or loose grazing. Loose grazing results in minimal soil disturbance and is often the method used by outfitters. The constant movement of the animals prevents concentrated soil disturbance. The animals also spend most of their time on dry, well vegetated hillsides, away from muddy areas and water. Dry, well drained soils with continuous vegetative cover are less susceptible to soil compaction and shearing (Warren et al. 1986), so there are virtually no long term impacts to the soil as a result of loose grazing. Stock spend most of their time in continuous movement across the land, eating grasses as they go (Ransom and Cade 2009).

Methodology and Intensity Level Definitions
The methodology used for impact analyses for vegetation and wetlands was based on surveys and previous projects conducted within the park. These analyses were conducted in the context of the project area. The intensity of impacts on vegetation and wetlands are defined as follows:

Impact Intensity	Impact Description
Negligible	No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. Operations would affect less than 0.1 acre and would not alter wetland functions and values. The effects would be on a small scale, no special status species would be affected, and wetland impacts would be less than 0.1 acre.
Minor	The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Impacts could result in a change to wetland functions and values, but the change would be of little consequence. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective.
Moderate	The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population and over a relatively large area. Impacts could result in a change to wetland functions and values; the change would be measurable and consequential. Mitigation to offset adverse effects could be extensive, but would likely be successful. Some species of special concern could also be affected.
Major	The alternative would have a considerable effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the park. Impacts would result in a noticeable change to wetland functions and values; the change would result in a severely adverse or substantially beneficial impact. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

3.2.1 Impacts of Alternative A (No Action)

Vegetation

There would be no commercial saddle and pack stock trips with implementation of Alternative A, so commercial stock outfitters would have no effect on vegetation or wetlands. Under this alternative Xanterra stock use would continue.

There would be a reduction in impacts from grazing, both in stock containment areas within backcountry campsites, and in areas currently used by loose grazing outfitted stock, because of the reduction in the overall number of saddle and pack stock across the analysis area. The change would be slight, however, since the current impacts are minor and grazing from animals and private and administrative stock would continue.

The possibility of non-native plant introductions would continue from general public and non-commercial saddle and pack outfitter guide use, but may be to a lesser degree because of fewer overall stock and people using the trails and backcountry campsites; this would likely result in a lower rate of spread and introduction. Introduction and movement of non-native plant species transported by wildlife, hikers, and noncommercial stock use would continue. Trails serve as corridors for dispersing non-native plant species into new areas. This is due to the altered environment on the trail and may be enhanced by the type and amount of recreational and administrative use (Pickering et al 2009). A study completed by Mount and Pickering (2009) found that hikers on roadsides and trails collected a substantial amount of seeds on socks and shoes.

Other backcountry users may shift part of their use to the assigned campsites since these sites would not be occupied by commercial stock outfitters. Based on observations from backcountry rangers, private stock users are less likely to turn their animals out to graze any distance from camp, which would result in less dispersed use and smaller isolated and more concentrated grazing areas close to the campsites that are no longer being used by commercial stock outfitters. Some private parties use electric fencing and staking in addition to highlines to keep stock close to camp (Figure 3-2). This would result in more concentrated disturbance to vegetation around camps and would result in a shift of grazing use associated with some camps. It is the timing and concentration of use on a given piece of ground that drives revegetated recovery more than the overall number of animals using an area. Since private parties are less likely to loose graze their animals, the shift in animal use occurring closer to camps would likely result in isolated overgrazing near these campsites. Use patterns at these camps were established decades ago so much of the plant community alteration has already occurred.

Under the no action alternative, there would be less overall grazing pressure on plant communities due to the reduced number of stock. Grazing by horses can result in damage to grasses and other palatable species (Newsome et al. 2004, 2008; Cater et al. 2008). Trampling of vegetation at established backcountry campsites would continue because recreationists would continue to use the campsites. The size of the barren areas would decrease due to the overall decrease in total use and more specifically, stock use. This would reduce the total amount of affected vegetation associated with the campsites. Due to continued non-outfitted recreation use, the affected vegetation along trails may be reduced, but would not change appreciably.

The rate of recovery would be dependent on recreational use patterns, the soil condition, and vegetative community involved. Where stock grazing is occurring in moist, forb rich meadows, the risk of soil displacement or compaction is increased. This would create isolated areas with slow post-grazing recovery. However, these communities are the most resilient to trampling and are expected to recover within a growing season following most types of use. Grass dominated meadow systems would recover if excessively trampled or overgrazed, but would be expected to recovery sufficiently if the excessive use is not recurring annually. Low shrub dominated communities are not expected to recover rapidly from human or stock use and one season of use can require decades for an area to recover. Past use has already

altered these communities; continued use would not affect the overall recovery rate in designated backcountry campsites.

Because of the reduction in stock in the backcountry, Alternative A would have minor, short- and long-term benefits to vegetation.

Wetlands
Under this alternative, wetlands would no longer be affected by commercial saddle and pack trips. Impacts would continue to occur from other recreation use and non-commercial stock use, so the overall benefit to wetlands would be minor. This minor benefit is due to the overall decrease of stock using the backcountry.

Cumulative Effects: Cumulative impacts on vegetation, rare plants, and wetlands are based on the incremental impact of the action when compared to other past, present, and reasonably foreseeable future actions in YNP. Due to the requirement for wetland and rare plant surveys and avoidance through project or plant relocation, the cumulative impacts to rare plants are adverse and minor.

Ongoing administrative activities such as road reconstruction and maintenance, backcountry operations, facilities maintenance, and hazard fuels reduction projects would continue to have adverse effects on vegetation and wetlands in the park. Road maintenance activities would require disturbance and removal of soils and vegetation by heavy equipment operation. Backcountry operations include horse and foot patrol and trail maintenance. Trail maintenance involves localized disturbance of soil and vegetation, and overnight use of campsites and cabins lead to some vegetation trampling and development of social trails. Most facilities maintenance activities occur in developed areas where minimal impacts to vegetation would occur. However, adverse impacts to vegetation may become necessary because some plant material may be cleared and removed for general operation practices. Additionally, Yellowstone's hazard fuels reduction projects require the removal of excess fuel (trees) from developed areas. Impacts to vegetation and wetlands is reduced by ensuring trails are maintained, including the use of barriers to prevent development of social trails and by monitoring construction and maintenance activities. Park visitation is expected to increase each year as a result of population growth in nearby communities and elsewhere. The growth and visitation will increase recreational use, such as angling, camping, and hiking. These activities trample vegetation and impact wetlands resulting in minor, short- and long-term adverse impacts to vegetation.

Native wildlife species, especially bison and elk, consume large quantities of vegetation, trample vegetation, kill or injure woody species, and travel through wetlands. It has been suggested that tree rubbing and debarking by bison may impede or even prevent forest invasion of open grasslands (NPS, Meagher 1973). There is some indication that grazing by both bison and elk can increase the productivity and stability of grassland systems, and enhance the nutrient content of grazed plants (Frank and McNaughton 1993; Singer 1995; Wallace 1996). These impacts, both adverse and beneficial, will continue throughout the park.

In all other camps used by outfitters, continued use by other backcountry users would likely perpetuate the existing amount of barren core.

Although impacts by outfitters to wetlands near these camps would cease, use by private stock parties and general backcountry users would still be have an effect on wetlands near camps and along trails. Private and administrative stock would still trample wetland vegetation, selectively graze, and cause soil damage to the wetlands habitat in the analysis area.

As mentioned above in the effects of Alternative A, there would be less overall grazing pressure on plant communities relative to existing conditions except around some popular private stock camps where confinement stock grazing is likely to occur. Existing campsites would continue to be used by private parties and would involve use of some wetland and wet meadow habitat and small isolated areas of trampling would continue unchanged.

The cumulative effect of any of the alternatives and the other past, present, and reasonably foreseeable future actions would result in an upward trend in vegetation condition, a slow return to natural, unmodified plant communities and succession. Areas would continue to recover from past overgrazing and the effects of wildfires. .

Alternative A, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to vegetation.

3.2.2 Impacts of Alternative B

Vegetation
Alternative B would continue commercial saddle and pack stock use at current levels. This continuation of use would have adverse impacts to vegetation at trailheads, trails, campsites, and stock grazing areas. A combination of natural and human disturbances, have to some degree, altered native vegetation at trailheads, along established and social trails, and at backcountry campsites and grazing sites.

The pattern of use at the campsites and trails was established decades ago, and much of the plant community alteration has already occurred. Use around the backcountry campsites would continue to result in some disturbance, but this use is small relative to the size of the analysis area.

Commercial saddle and pack use at the trailheads would continue to impact vegetation, mainly through trampling and grazing. Installation of hitch rails at impacted trailhead sites would consolidate those impacts, while reducing impacts on the periphery of the trailhead. In addition to trampling, use has resulted in a reduction of plant growth, a change in species composition, and contributed to the establishment of non-native plant species. Use inevitably results in compaction of soils and vegetation on trails and at backcountry campsites. Soil compaction would result in increased runoff and reduction of vegetation at sites. Heavy grazing can lead to changes in species composition and reduce biomass production, plant size and seed output (Briske 1991, McClaran and Cole 1993).

Figure 3-2 Resource damage from tying to trees

As stated in the affected environment section, commercial saddle and stock users are more likely than private parties to use the loose grazing technique. This technique results in fewer impacts to vegetation, compared to stock containment. A 2004 study on impacts to mountain meadows found that grazing caused a decrease in productivity, reductions in basal groundcover, and an increase in bare ground (Cole et al, 2004). Where soils are low in nutrients the addition of horse manure can cause an increase in nutrients and affect vegetation by changing species composition (Newsome et al. 2004, 2008; Cater et al. 2008).

As stated above in the soils section, 177 backcountry campsites were surveyed in 1992, and in 2007, 290 were surveyed. Of the campsites that were open to stock use and surveyed both years, the affected vegetation was 1749 ft^2 in 1992 and 1504 ft^2 in 2007. The average affected vegetation for all campsites surveyed in 2007 was 1542 ft^2. Use around the backcountry campsites would continue to result in some disturbance, but based on the data presented in chapter one on historical use, the amount of affected vegetation would be expected to remain steady.

Commercial backcountry stock use would lead to nonnative vegetation in Yellowstone's trailheads and backcountry. While stock in the park would use only certified weed-free forage in the park and no hay while in the backcountry, some dispersal of nonnative seeds would be expected. This would occur because of the period of time when a stock animal would pass through their forage and that certified weed-free hay does not include all nonnative vegetation in their inspection process. Nonnative vegetation associated with stock use would be expected under this alternative.

For the reasons stated above, implementation of Alternative B would have moderate, short- and long-term adverse impacts to vegetation.

Wetlands

Although most trails are sited to avoid wetlands, some do come in contact with wetlands, particularly seasonal wetlands. Trails passing though wetlands are usually compacted and water tends to migrate to the slightly lower elevation of the trail. This occurs even during some drying periods where the trail is lower than the wetland surface. The amount of water in the trail during much of the use period often leads to a muddy situation where stock and hikers may have difficulty getting through the wetland. When users re-negotiate the wettest areas, they create other user-made trails that increase the impacted area. Users may also widen and deepen the impacted area. Water may begin to flow as a stream through the wetland, where the water previously infiltrated into the soil. The net effect is that water leaves small areas adjacent to trails in wetland faster than before. The existing campsites would continue to be used by pack and saddle stock outfitter-guides, potentially impacting wetlands. The impacts caused by recent past use to nearby wetlands would continue, resulting in small, isolated areas of vegetative trampling, selective grazing, and soil damage.

Figure 3-3 Wetland Trail Crossing

As stated above, stock spend most of their time on dry, well vegetated hillsides, away from muddy areas and water. The park's closure of trails to stock in the spring/early summer mitigates impacts to wetlands. This would be moderately effective at reducing impacts to wetlands by minimizing the amount of soil compaction and erosion.

Impacts to wetlands/riparian areas at stream crossings would continue to occur. These impacts would be in line with historical impacts, with little additional impacts expected to occur. Alternative B would have minor to moderate, short- and long-term adverse impacts to wetlands.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to vegetation.

3.2.3 Impacts of Alternative C (Preferred Alternative)

Vegetation
Impacts to vegetation under Alternative C would be similar to those listed under Alternative B. Implementation of the monitoring-based management actions would displace commercial stock users to other trails and campsites in the park, minimizing benefits from non-use. However, limits placed on sensitive areas (i.e., wetlands, alpine meadows) could have a beneficial effect to vegetation. The propagation on nonnative seed through commercial and noncommercial stock would continue but associated disturbance would be lessened through monitoring-based management. For the above reason and the reasoning in Alternative B, impacts from this alternative would be short- and long-term, minor and adverse.

Wetlands
Impacts to wetlands under Alternative C would be similar to those listed under Alternative B; however implementation of the monitoring-based management actions would more likely be taken to protect wetlands along the trail. Use of these management tools to protect wetland and/or riparian areas could have a minor short- and long-term beneficial effect, but overall this alternative would have a minor adverse effect on wetlands.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to vegetation and wetlands.

3.3 Water Quality

Affected Environment
Yellowstone encompasses an approximately 3,500 square-mile watershed that provides the surrounding area with high quality water. Streams and lakes in Yellowstone are designated as Class I, Outstanding Resource Waters, by the state of Wyoming. Existing water quality must be maintained in Class I waters. The water resources within Yellowstone cover 112,000 acres. More than 150 lakes compose an area of approximately 108,000 acres. Yellowstone Lake, the largest body of water above 7,500 feet elevation in North America, occupies 139 square miles. Other major lakes include Shoshone, Lewis, and Heart Lakes. More than 220 named and hundreds of unnamed streams form over 2,650 miles of flowing water in the Park. River systems in the park include the Gardner, Lamar, Yellowstone, Madison, Firehole, Gibbon, and Lewis rivers. The hydrology of most streams and rivers in the park is driven by snowmelt with peak discharge occurring in the late spring. Discharge then declines gradually over summer and returns to near base flow by late fall.

Beginning in 2002, the Yellowstone Center for Resources fisheries and aquatic sciences staff initiated a long-term water quality monitoring program that includes monthly sampling of 19 sites, 12 at streams and 7 in Yellowstone Lake (NPS, 2010a). Water quality information collected from these sites includes water temperature, dissolved oxygen, pH, specific conductance, turbidity, and total suspended solids. Several ions and nutrients metrics are also collected from stream locations.

Chemical, physical, and biological properties of the park's surface water vary considerably with season, location, elevation, geology, and proximity to thermal activity. Thermal areas affect water temperature, acidity, and dissolved chemicals. Generally, dissolved ion concentrations in Yellowstone waters are relatively low compared to other surface waters, especially in the spring during high runoff; higher concentrations are recorded in the fall and winter during low flow conditions. Both phosphorus and nitrogen concentrations are generally very low in most park waters. Of the park's major rivers, the Madison River tends to have the highest nutrient concentrations. Three sites did not meet EPA or state standards for pH values during 2010 because of local geology and contributions from nearby thermal sources

Based on water quality standards for aquatic life, the State of Montana considers a portion of Reese Creek on the park's northern boundary impaired. Streamflow in 2009 and 2010 remained above the minimum threshold stipulated by adjudicated water rights, but irrigation by adjacent landowners often leaves too little water to sustain healthy invertebrate and fish populations.

As a result of mining activity near the northeast entrance of the park, tailings remain in the Soda Butte Creek floodplain, impairing the segment of the creek that extends downstream to the park boundary. Park staff periodically measure arsenic, copper, iron, and selenium in the water and sediment at the boundary. The iron concentrations exceeded EPA and Montana standards for aquatic life in two out of 36 visits in 2009 and three out of 24 visits in 2010. However, aquatic invertebrate sampling indicated that the site scored high in supporting aquatic life. State and federal agencies are working on a plan to remove the tailings from the streambed.

Large portions of the Yellowstone Headwaters sub-basin were burned in the 1988 Yellowstone wildfires and in subsequent fires. However, any potential water quality impacts from these fires or from the geothermal features are considered natural (WY DEQ, 2012).

Wildlife, domestic pack animals, and hikers have caused small scale localized changes to streams. At stream crossings without culverts or bridges, stream banks are broken down because traffic is concentrated. There may be a slight increase in stream sedimentation at some of these locations, but the sedimentation contribution from the damaged section of stream banks is not detectable compared to background in-stream bank erosion. Higher levels of stream sedimentation may come from trail erosion as water drains down the trail during high intensity rainstorms and empties into the stream at crossings if not diverted by water bars or crossdrains. Many areas within YNP have been heavily grazed by elk and/or bison and many water quality concerns reported (Houston, 1982; Singer, 1996; NPS 1997).

Private pack stock, commercial stock, and human users introduce fecal coliform into waterways, adding to the background level from wildlife. Waterways in the vicinity of stock camps, at trail crossings and stock watering sites may have locally higher levels of the bacteria during some periods of time but no levels above the state water quality standard have been detected. Any increases are limited and short-term compared to the analysis area as a whole due to the fact that these campsites, trail crossings and stock watering sites are isolated and infrequent across the landscape. Fecal coliform levels near trail crossings and at stock watering sites may be elevated during snowmelt and rainstorms as animal manure is washed down trails or overland into the streams at crossings if not diverted by water bars or crossdrains, or into lakes. Along streams, however, dilution by streamflow keeps fecal coliform levels

well below the state water quality standard. Coliform bacteria also have a limited time of viability when dried and exposed to sunlight, as occurs in grazing areas away from water. This further reduces the risk of surface water contamination.

Methodology and Intensity Level Definitions
Information regarding potential impacts was obtained from interdisciplinary team members and relevant literature. The area of analysis includes Yellowstone, as well as the local and regional environment. Given the above water quality issues and methodology and assumptions, the following impact thresholds were established in order to describe the relative changes in water quality under the alternatives.

Impact Intensity	Impact Description
Negligible	Impacts (chemical, physical, or biological effects) would not be detectable, would be well below water quality standards or criteria, and would be within historical or desired water quality conditions.
Minor	Impacts (chemical, physical, or biological effects) would be detectable but would be well below water quality standards or criteria and within historical or desired water quality conditions.
Moderate	Impacts (chemical, physical, or biological effects) would be detectable but would be at or below water quality standards or criteria; however, historical baseline or desired water quality conditions would be temporally altered.
Major	Impacts (chemical, physical, or biological effects) would be detectable and would be frequently altered from the historical baseline or desired water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would temporarily be slightly and singularly exceeded.

3.3.1 Impacts of Alternative A (No Action)

Under the No Action Alternative, commercial stock use would not continue. The decrease in total stock use would reduce the risk of sedimentation at trail stream crossings without bridges or culverts, access points for watering, and erosion from campsites. Because of the minor reduction in use compared to overall backcountry use, the change in stream sedimentation and erosion would be negligible compared to natural background inputs from ongoing channel and hill-slope erosion.

Shading along riparian areas and streams would not change with this alternative because of the relatively small reduction in use levels at existing crossings and riparian areas. As a result, there would be no measureable change in stream water temperatures within the analysis area.

With the reduction in stock use there would be a corresponding slight decrease in the risk of animal waste and associated fecal coliform or urine entering surface waters. This change from current conditions is not expected to be detectable or measureable within the analysis area, particularly due to the large numbers of wildlife that inhabit YNP.

With the No Action Alternative, any changes in streamflow are not expected to be measurable or detectable within the current available accuracy of measurement techniques. With the slight reduction in stock use levels in this alternative, there would be a corresponding slight decrease in compacted soil area in riparian areas. This could lead to improved water storage and timing of streamflow but these changes are not expected to be measurable.

Because of the reduction in stock in the backcountry, Alternative A would have negligible, short- and long-term benefits to water quality.

Cumulative Effects: Cumulative impacts on water resources/water quality are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Construction and facilities maintenance can adversely affect water quality by disturbing soils and hardening surfaces (e.g. paving) near stream corridors and promoting erosion and increased runoff, which can contribute to increased turbidity levels in adjacent surface waters. Implementation of the Native Fish Conservation Plan has resulted in minor adverse impacts due to increased in-water activities. Past and ongoing recreational use such as fishing, camping, and hiking would continue, resulting in adverse localized, temporary impacts to water quality. Hiking and camping activities can disturb soils which can promote erosion leading to increased sedimentation in adjacent water bodies. Trail maintenance and construction would continue and cause short-term erosion of soil into nearby waters.

Past fires over the analysis area have increased surface erosion rates and input of fine sediment to stream channels. In general, the moister streamside riparian areas do not burn as hot as uplands and thus sediment transport to surface water is reduced.

Non-commercial stock use may be causing small site specific local changes to streams and wetlands on a limited basis. At trail-stream crossings, stream banks are broken down because of the traffic at a single location. These damaged crossings may cause a slight increase in stream sedimentation, but the sedimentation contribution from the damaged section of stream banks is not detectable compared to stream bank erosion. More noticeable stream sedimentation may come from trail erosion as water drains down the trail during high intensity rainstorms and empties into the stream at crossings. Fecal coliform levels near these crossings may be elevated during snowmelt and rainstorms as horse manure is washed down the trail and into the stream but higher streamflows at these times increase the dilution factors.

The amount of recreation use in the park is expected to increase in the future. The projected increases in use may contribute to higher fecal coliform levels or stream sedimentation in local areas where the use is the highest, but use is so dispersed any effect is expected to be localized and still meet water quality standards.

Wildfires may also occur throughout any of the analysis areas and suppression activities such as fire line construction would likely occur with a wild fire. Rehabilitation occurs to divert surface water off the constructed fire lines. These activities will not increase stream sedimentation because transport to surface water is reduced.

Alternative A, coupled with past, present, and foreseeable future actions would result in minor, short- and long-term adverse effects to water quality.

3.3.2 Impacts of Alternative B

Commercial saddle and pack stock use would continue to slightly increase the risk of sedimentation when animals cross streams on trails without bridges or culverts or access streams for water and from soil erosion at campsites. Changes would not be detectable compared to ongoing channel and hill slope erosion, except at the point of disturbance in the stream channel during the time of traffic crossing in water. There would be no detectable difference in stream sedimentation between alternatives across the analysis area. Stream turbidity is not expected to change under any of the alternatives, because the suspended sediment would not change by measurable levels.

No new created openings would occur in riparian or other areas or any measurable reduction in stream shading, so water temperature in any stream in the analysis area would not be raised as a result of commercial saddle and pack activities. Therefore, water temperature within the analysis area would not change from current levels with this alternative.

Continuation of commercial saddle and pack use would not result in measurable or detectable changes from the current conditions for the risk of animal waste and associated fecal coliform or urine entering surface waters.

No measurable changes in stream flow would occur in any alternative from saddle and pack stock activities. Commercial saddle and pack use could result in reduced late-season water flow through portions of impacted wetlands if water flows down compacted trails and through the wetland more rapidly than in non-impacted wetlands but any changes are not expected to be measurable at the current accuracy level of streamflow measurement techniques. There are few trails passing through wetlands in the analysis area, so any changes in late season flows as a result of this would be well within the natural variation in stream flow levels from year to year. Refer to the vegetation and wetlands section for an analysis of the impacts to wetlands.

Because it is a continuing action and stock numbers would be in line with historic use, Alternative B would have negligible, short- and long-term adverse impacts to water quality.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to water quality.

3.3.3 Impacts of Alternative C (Preferred Alternative)

Impacts to water quality under Alternative C would be similar to those listed under Alternative B. However, as stated in the previous section, implementation of the monitoring-based management actions would more likely be taken to protect water sources along the trail. Use of these management tools to protect water source areas could have a minor long-term beneficial effect on water quality, with the overall impact from Alternative C being negligible, short- and long-term adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to water quality.

3.4 Wildlife

Affected Environment

Yellowstone National Park is home to a wide variety of wildlife. At least 300 species of birds, 60 species of mammals, 4 species of amphibians, 6 species of reptiles, and 12 species of native fish have been documented within the park. The distribution, abundance, and diversity of species within the park vary by season, elevation, and variety of habitats present.

Mammals

The park is home to the largest concentration of mammals in the lower 48 states with 67 different mammals living within the park (YNP, 2013). Yellowstone mammals include the black bear (*Ursus americanus*), coyote (*Canis latrans*), fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), marten (*Martes americana*), striped skunk (*Mephitis mephitis*), mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis*), moose (*Odocoieus hemionus*), white-tailed deer (*Odocoileus virginianus*), bison (*Bison bison*), elk (*Cervus canadensis*), beaver (*Castor canadensis*), river otter (*Lontra canadensis*), deer mouse (*Peromyscus maniculatus*), red squirrel (*Sciurus vulgaris*), meadow voles (*Microtus pennsylvanicus*),

porcupine (*Erethizon dorsatum*), and the snowshoe hare (*Lepus americanus*). There are also eight species of bats that may be present in the park including the little brown bat (*Myotis lucifugus*), the big brown bat (*Eptesicus fuscus*), and the silver-haired bat (*Lasionycteris noctivagans*) (YNP, 2013).

Birds

Records of bird sightings have been kept in Yellowstone since its establishment in 1872. These records document approximately 300 species of birds to date, including raptors, songbirds, shorebirds, and waterfowl. Approximately 150 species nest in the park. The variation in elevation and habitat types found within Yellowstone contribute to the relatively high diversity. Many of the birds are migratory. The YNP bird program monitors a small portion of its breeding bird species to gather information like reproduction, abundance, and habitat use, on multiple species from a wide variety of taxonomic groups; and maintain data from 20 or more years for several species. Long-term monitoring efforts help inform park staff of potential shifts in ecosystem function (e.g., climate change effects) for Yellowstone's bird community and guide future management decisions.

Fish

Yellowstone's native fish have underpinned natural food webs, had great local economic significance, and provided exceptional visitor experiences. Native cutthroat trout are thought to be among the most ecologically important fish of the Greater Yellowstone Ecosystem and highly regarded by anglers. Several factors, nonnative species and disease among them, are threatening the persistence of native fish. The ranges and densities of Yellowstone's native trout and grayling were substantially altered during the 1900s due to exploitation and introduction of nonnative species. Nonnative species in the park include brook trout, brown trout, lake chub, lake trout, and rainbow trout. YNP's goal is to restore the ecological role of native species, including fluvial Arctic grayling, westslope cutthroat trout, and Yellowstone cutthroat trout, while ensuring sustainable native fish angling and viewing opportunities for visitors.

Despite changes in species composition and distribution, large-scale habitat degradation has not occurred. Water diversions, water pollution, and other such impacts on aquatic ecosystems have rarely occurred in Yellowstone. Consequently, fish and other aquatic inhabitants continue to provide important food for grizzly and black bears, river otters, mink, ospreys, bald eagles, pelicans, and many other birds and other species.

Aquatic nuisance species disrupt ecological processes because they are not indigenous to the ecosystem. Invasive organisms can cause species extinction, with the highest extinction rates occurring in freshwater environments. Aquatic nonnative species that are having a significant detrimental effect on the park's aquatic ecology include lake trout in Yellowstone Lake; brook, brown, and rainbow trout in the park's streams and rivers; and the parasite that causes whirling disease. Though there are other aquatic nonnative species in the park, their effects are less dramatic.

Methodology and Intensity Level Definitions

Impact analyses of fish and wildlife were based on recent studies and previous projects conducted within the park. The intensity of impacts to wildlife is defined as follows:

Impact Intensity	Impact Description
Negligible	Neither wildlife nor fish would be affected, changes would be either non-detectable or, if detected, would have effects that would be considered slight and short-term.
Minor	Temporary displacement of a few localized individuals or groups of animals or fish; mortality of individuals that would not impact population trends; mitigation measures, if needed to offset adverse effects, would be simple and successful.

Moderate	Effects to wildlife would be readily detectable, long-term and localized, with consequences affecting the population level(s) of specie(s). Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	Effects to wildlife would be obvious, long-term, and would have substantial consequences to wildlife populations in the region; mortality of a number of individuals that subsequently jeopardizes the viability of the resident population; extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

3.4.1 Impacts of Alternative A (No Action)

Impacts to wildlife from commercial saddle and pack use would not occur under this alternative. Based on 2012 data, there would be 619 fewer day rides and 5,279 less stock use nights in the park. The loss of commercial saddle and pack use in the park would likely result in an increase in Xanterra stock use, which could reduce the potential benefits to wildlife. Xanterra uses the same specific trails in Mammoth, Tower-Roosevelt, and Canyon for day rides so any impacts to wildlife from an increase in use would be negligible. Wildlife would continue to be affected by other users in YNP. Under Alternative A, negligible, short- and long-term beneficial impacts to wildlife would be expected to occur.

Cumulative Effects: Cumulative impacts on wildlife are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in YNP. Construction projects in YNP would continue to occur. Ongoing administrative activities such as hazing, wildlife monitoring, road construction, and facilities maintenance would continue to affect some wildlife resources. Hazing efforts are carried out by park personnel to discourage wildlife (e.g. bears, wolves, and coyotes) from using developed areas and to move bison back into the park during winter months. Some wildlife would be permanently removed from the population if they become habituated to human food and pose a threat to human safety. Wildlife monitoring practices are used to document various demographics of wildlife populations in the park and may cause adverse impacts ranging from generalized disturbance to sedation and handling of the animals. Noise from road construction and facilities maintenance could disturb wildlife in localized areas. Impacts from these disturbances could range from no impact to movement away from the immediate area. Park visitation is expected to increase each year as a result of population growth in nearby communities and elsewhere. Past and ongoing recreational uses such as boating, angling, camping, and hiking would continue park-wide. Fishing occurs park-wide during the summer months and could contribute to generalized disturbance of all wildlife species that occur near streams and lakes. Camping and hiking occur throughout the park and could lead to generalized disturbance which could affect feeding and resting behavior. Camping activities risk habituation of bears and other carnivores to human foods which could lead to some individual animals being euthanized. Both ongoing administration activities and increased visitor use could lead to impacts to wildlife populations throughout the park at both short- and long-term negligible to minor levels.

Vegetation removal would occur around backcountry cabins, other developed areas in the park, utility right-of-ways, and development outside of the park as well as the 1992 Park-wide Road Improvement Plan. While wildlife mortality would not be expected from these projects, wildlife would be displaced. Invasive plant species could be introduced into the park during these projects, reducing the amount of native plants found within the park boundaries which provide food and habitat for fish and wildlife. The Vegetation Management Guidelines for Construction Disturbance in Yellowstone National Park, the Non-native Vegetation Management Plan, and the Whitebark Pine Strategy plan would be followed to minimize adverse effects on wildlife species and habitat.

Erosion and sedimentation of surface water from construction during development of these projects could have adverse effects on surface water, and thus fish and aquatic habitat. Additional impacts could occur from erosion of hiking trails, runoff from the roads, and accidental fuel spills. There are also impacts on individual fish from the heavy recreational fishing; however, the fisheries are managed so as not to adversely affect overall fish populations.

Cumulative effects to fish and wildlife from such actions would be minor and both adverse and beneficial. While some individuals and groups would be displaced, overall wildlife populations would not be jeopardized. Alternative A would contribute minor, adverse cumulative impacts on fish and wildlife. Beneficial effects are also anticipated because vegetation would be managed to reduce fuel within the Park, lowering the chance of a large scale, severe fire. Alternative A, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to wildlife.

3.4.2 Impacts of Alternative B

This alternative would continue commercial saddle and pack use, which due to disturbances to wildlife and alterations of habitat would have a minor, adverse effect. Impacts would occur on trails and at campsites, resulting in displacement of wildlife.

Many of the visitor use and management actions that are currently affecting wildlife would remain the same. Management actions and strategies associated with this alternative that would have the potential to affect wildlife include trail maintenance and monitoring.

This alternative would not alter forest stands with the exception of firewood use in and around campsites. Abundant habitat exists away from the campsites, so forest-dwelling species as a whole would be largely unaffected. Overnight commercial stock use is not allowed until July 1st, which reduces conflicts with wildlife species, particularly during calving. Meadows adjacent to existing camps would continue to be grazed at approximately the same intensity as in the recent past. Impacts to meadow habitat would be limited to a few heavily used sites and occurring on a small portion of the landscape.

In accordance with 36 CFR §1.5(a)(2) and the 2012 Superintendent's Compendium, visitors are prohibited from willfully approaching, remaining, viewing, or engaging in any activity within 100 yards of bears or wolves, or within 25 yards of any other wildlife including nesting birds, or within any distance that disturbs, displaces, or otherwise interferes with the free unimpeded movement of wildlife, or creates or contributes to a potentially hazardous condition or situation. The feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities are also prohibited by 36 CFR §(a)(2). YNP food storage and trash regulations would mitigate impacts of wildlife seeking food at campsites. The Superintendent's Compendium states that "Concessions permittees operating in the backcountry must suspend all food, garbage, stock feed, cooking utensils and stoves (except clean and sanitized utensils and stoves), ice chests and any scented articles at least 10 feet off the ground and at least 4 feet from tree trunks at night and/or when not in use or attended" and, "In all areas, food, garbage, and equipment used to cook or store food, when not in use or attended**,** must be sealed in a vehicle or camping unit made of solid, non-pliable material or suspended at least 10 feet above the ground and 4 feet horizontally from a post, tree trunk, or other object."

The wildlife within YNP would generally remain undisturbed and would be managed under the existing master, resource, and fire management plan provisions for wildlife species; therefore, there would be short- and long-term negligible to minor adverse impacts to wildlife.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with

these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to wildlife.

3.4.3 Impacts of Alternative C (Preferred Alternative)

Impacts to wildlife under Alternative C would be the same as those listed under Alternative B. Implementation of the monitoring-based management actions would displace commercial stock users to other trails and campsites in the park, negating any benefit from non-use. For the above reason and the reasoning in Alternative B, impacts from this alternative would be short- and long-term negligible to minor adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to wildlife.

3.5 Special Status Species

Affected Environment

The species listed below are either federally listed as endangered, threatened, or candidate species or are listed by the park as a species of management concern. Only species that exist or have the potential to exist in the project area are listed. The evaluation of effects included direct, indirect, interrelated, interdependent, and cumulative impacts as defined by the Endangered Species Act (ESA). Consultation with the U.S. Fish and Wildlife Service (USFWS) will occur for this plan. Mitigation proposed by the park for impacts on threatened or endangered species could include avoidance, minimization, and conservation measures as agreed upon by the USFWS.

Boreal toad (*Bufo boreas*): Typically breeds in park areas with water chemistry characteristics that include a pH >8.0, high conductivity, and high acid-neutralization capacity; many of the sites have a geothermal influence (Koch and Peterson 1995). Boreal toad breeding areas are common in the Upper Geyser Basin and have been documented in the Swan Lake Flats area. Boreal toads can also be found in riparian and riverine areas where they feed if adequate cover is available. Although declining throughout much of their range, boreal toads remain widespread throughout the park.

Bald Eagle (*Haliaeetus leucocephalus*): The USFWS removed the bald eagle from the list of endangered and threatened wildlife on August 8, 2007. Current data indicate populations of bald eagles have recovered in the lower 48 states, with an estimated minimum of 9,789 breeding pairs now compared to 417 active nests in 1963 (USFWS 2006). Since 1984, the number of nesting pairs in YNP has increased substantially, with 31-34 nest attempts per year since 2001. Thus the park may have reached saturation in the number of nesting pairs that can be supported (Baril et al. 2009). Nesting and fledgling bald eagles in Yellowstone increased incrementally from 1987 to 2005 (McEneaney 2006). Resident and migrating bald eagles are now found throughout the park, with nesting sites located primarily along the margins of lakes and shorelines of larger rivers. The bald eagle management plan for the Greater Yellowstone Ecosystem achieved the goals set for establishing a stable bald eagle population in the park, with a total of 26 eaglets fledged from 34 active nests during 2007 (McEneaney 2006). This is the most fledged eaglets ever recorded Yellowstone and the increasing population trend indicates habitat is not presently limiting the growth of the population.

American peregrine falcon (*Falco peregrines anatum*): The American peregrine falcon was removed from the list of endangered and threatened wildlife on August 25, 1999 due to its recovery following restrictions on organochlorine pesticides in the United States and Canada, and implementation of various

management actions, including the release of approximately 6,000 captive-reared falcons (64 FR 46541). The U.S. Fish and Wildlife Service has implemented a post-delisting monitoring plan pursuant to the Endangered Species Act that requires monitoring peregrine falcons at three-year intervals that began in 2003 and will end in 2015. Monitoring estimates from 2003 indicate territory occupancy, nest success, and productivity were above target values set in the monitoring plan and that the peregrine falcon population is secure and viable (71 FR 60563). Peregrine falcons reside in Yellowstone from April through October, nesting on large cliffs. The number of nesting pairs and fledglings in the park has steadily increased from zero in 1983 to 32 pairs and 47 fledglings in 2007 (Baril et al. 2010). A subset of all historic nesting territories are monitored annually and estimates of nesting success and productivity indicate a healthy population.

Trumpeter swan (*Cygnus buccinator*): Trumpeter swans were nearly extinct by 1900, but a small group survived by remaining year round in the Greater Yellowstone Area. In 2010 there were approximately 46,000 trumpeter swans in North America (YNP 2013). Yellowstone supports resident, non-migratory trumpeter swans through the year, and its areas of ice-free water that diminish as winter progresses provide limited, temporary habitat for migrants from the region, Canada, and elsewhere during the winter. The NPS is committed to the conservation of resident trumpeter swans and preserving habitat for winter migrants in Yellowstone because swans are part of the natural biota and a species with considerable historical significance. However, counts of resident, adult trumpeter swans in the park decreased from a high of 69 in 1961 to 24 in 2013, including 7 cygnets that were released to augment the population. Causes of this decline are unknown, but may include decreased immigration, competition with migrants, and the effects of sustained drought, human disturbance, and predation on productivity (McEneaney 2006). The Rocky Mountain trumpeter swan population operates at a scale larger than Yellowstone, and the dynamics of resident swans in Yellowstone appear to be influenced by larger sub-populations and management actions in the Greater Yellowstone Area and elsewhere.

White Pelican (*Pelecanus erythrorhynchos*): American white pelicans were identified as a Species of Management Concern because pelican control in the 1920s followed by human disturbances in the 1940s and 1950s kept the population at low levels (Schaller 1964). Following protective measures implemented in 1960, the number of nesting attempts increased to >400 during the mid-1990s. Since then the population has declined slightly, but averages approximately 360 breeding pairs per year. Although the population is stable, the number of nesting attempts and fledged juveniles fluctuates greatly from year to year. Flooding occasionally takes its toll on production, as does disturbance from humans or predators (Diem and Pugesek 1994). Yellowstone cutthroat trout (YCT) is the main food for white pelicans in Yellowstone and declines in this food source may also affect the population. In 2013, a total of 339 young fledged from 601 nest attempts.

Yellowstone Cutthroat Trout (*Oncorhynchus clarkii bouvieri*): A range-wide status review estimated that the conservation population (>90% genetic purity) of YCT occupy over 6,300 km within their native range in Idaho, Montana, Nevada, Utah, and Wyoming. Yellowstone Lake, at over 84,000 surface acres, is home to the largest population of YCT in existence (Varley and Schullery 1998) and is an important food source for many animal species in the park. In Yellowstone Lake, recent threats such as lake trout introduction, drought, and whirling disease have severely diminished the ecological role of this fish.

Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*): Numerous stressors, including stocking of non-native fish, habitat degradation and fragmentation from land use activities, have reduced the distribution and abundance of WCT. The subspecies currently occupies only 19% to 27% of its historical range east and west of the Continental Divide in Montana and about 36% of its historical range in Idaho. Even some of the historically most secure populations in Glacier National Park and the Flathead Basin of Montana are in serious decline. In the upper Missouri river drainage, WCT now occupy less than 5% of their historical range. The remaining population persists as small-stream residents occupying isolated

habitats ranging from several hundred meters to a few kilometers in extent. As a result, these populations face a high risk of extinction. In Yellowstone, WCT are present in approximately 3 km of a small tributary to Grayling Creek, as a restored population in East Fork Specimen Creek, and as a population stocked in Geode Creek in the 1920s.

Arctic Grayling (*Thymallus arcticus*): Arctic grayling are listed as a Species of Special Management Concern by the NPS and the USFWS. Fluvial (stream-dwelling) GRY were once widespread in the Missouri River drainage, but wild grayling persist only in the Big Hole River, representing approximately 4% of their native range in Montana. In Yellowstone, fluvial GRY historically occupied waters of the Madison and Gallatin River drainages on the park's west side. Introduced populations of adfluvial (lake-dwelling) GRY exist in Wolf and Grebe lakes, which form the headwaters to the Gibbon River. A 2005–2006 study indicated that the small number of GRY in the Gibbon and Madison rivers are likely emigrants from Wolf and Grebe lakes and that the native fluvial GRY population has most likely been extirpated from the park.

Whitebark Pine (*Pinus albicaulis*); **Status - Candidate Species for T&E**: Whitebark pine is a major component of the forest community in areas above 8,400 feet and a major understory component of lodgepole-dominated forests from 7,000 to 8,400 feet. Seeds of the whitebark pine are important food for grizzly bears and a variety of other wildlife species. Whitebark pine populations in Yellowstone have been declining due to native mountain pine beetles (*Dendroctonus ponderosae*) and non-native blister rust, which is caused by a fungus, *Cronartium ribicola* (Schwandt 2006). In July 2011, the USFWS determined that whitebark pine warrants protection under the ESA, but that adding the species to the Federal List of Endangered and Threatened Wildlife and Plants is precluded by the need to address other listing actions of a higher priority. This species is now added to the list of candidate species eligible for ESA protection and its status will be reviewed annually. Whitebark pine exist both as an overstory and understory component within the forest communities in many regions of the park.

Yellowstone Sand Verbena (*Abronia ammophila*): Yellowstone Lake's shore is the only place in the world where Yellowstone sand verbena grows. The presence of a sand verbena at 7,700 feet elevation in the northern Rockies is unexpected, as most members of this North American genus occur in the Southwest or along the Pacific Coast. Warmth provided by the geothermal activity in the area may be helping this species tolerate the long, cold winters followed by a brief summer in which they bloom and reproduce. The taxonomic relationship of this sand verbena population to others is a matter of debate. It may be distinct at the sub specific level, and is certainly reproductively isolated from the closest sand verbena populations, which are in the Bighorn Basin of Wyoming. Yellowstone sand verbena is restricted to the shoreline of Yellowstone Lake and the location of nearly all of the plants on the lake's north shore places the species at risk of extinction due to random events affecting the population.

Ross' bentgrass (*Agrostis rossiae*): Ross's bentgrass is restricted to Yellowstone National Park occurring in the Lower Geyser Basin, Midway Geyser Basin, Upper Geyser Basin and Shoshone Geyser Basin on geothermally influenced warm ground sites. This Yellowstone endemic is globally rare and was considered for possible listing under the Endangered Species Act, though in June 2011 the U.S. Fish and Wildlife Service determined that listing was not warranted at this time since they determined that existing National Park Service regulatory mechanisms are adequate to protect the species.

Yellowstone sulfur wild buckwheat (*Eriogonum umbellatum var. cladophorum*): Yellowstone sulfur buckwheat is only found in the Firehole River drainage. Yellowstone sulfur buckwheat is adapted to survive on barren, slightly geothermally influenced open areas. It does not tolerate any shading, so it is a conspicuous component of relatively dry plant communities adjacent to the park's thermal areas. The geographic range of this variety is highly restricted, having been found only from the Upper, Midway, and Lower geyser basins to the vicinity of Madison Junction. Adaptation to life in a geothermal setting

means that this taxon has to be able to move with changes in the geothermal system. Yellowstone sulfur buckwheat is capable of recolonizing disturbed areas, as demonstrated by its presence near the Old Faithful Inn and Visitor Education Center, and other locations in the Upper Geyser Basin.

North American pronghorn (*Antilocapra americana*): Yellowstone's pronghorn population was one of only a few not exterminated or decimated by early in the 20th century and, as a result, was the source for re-establishing or supplementing populations throughout much of its range (Lee et al. 1994). These pronghorn express much of the genetic variation that was formerly widespread in the species, but is no longer present elsewhere (Reat et al. 1999). This population also sustains one of only two long-distance pronghorn migrations that persist in the greater Yellowstone region (White et al. 2007). There are serious concerns about its viability because low abundance (~200) and apparent isolation have increased its susceptibility to random, naturally occurring catastrophes (NPS 2010; National Research Council 2002).

Bison (*Bison bison*)
Plains bison at Yellowstone have been petitioned for listing as an endangered species twice in the past 15 years and both times the U.S. Fish and Wildlife Service has declined to list the species. The Yellowstone bison population has been identified as a distinct population by USFWS definition. The population is comprised of plains bison that historically occupied about 20,000 square kilometers (km^2) in the headwaters of the Yellowstone and Madison rivers of the western United States. While nearly extirpated in the early 20^{th} century, Yellowstone National Park provides sanctuary to the only wild and free-ranging bison population to continuously occupy historic range. Intensive husbandry, protection, and relocation were used to bring back the population, and in summer 2011 there were about 3,700 bison in the park (1300 on the central range that includes the Lake development area). Yellowstone bison are managed as a single population having two distinct breeding areas with individuals that move across an extensive landscape (220,000 acres). These bison are subject to natural selection factors such as competition for food and mates, predation, and survival under substantial environmental variability. Thus, they have retained the adaptive capabilities of plains bison. Yellowstone bison contribute a unique genetic lineage to plains bison that is not represented elsewhere within populations managed by the Department of Interior. They have high genetic diversity compared to other populations of plains bison, and are one of a few bison populations with no evidence or suggestion of potential cattle ancestry.

The central herd occupies the central plateau of Yellowstone National Park, extending from the Pelican and Hayden valleys in the east to the lower elevation and thermally influenced Madison headwaters area in the west. Central herd bison congregate in the Hayden Valley for breeding. Most bison move between the Madison, Firehole, Hayden, and Pelican valleys during the rest of the year. Some of these bison are likely to migrate north to the Gardiner Basin during the winter months and return to the Hayden Valley to breed. Emigration has been observed with more bison emigrating north from the central range than vice versa. The northern herd occupies the area commonly referred to as the northern range, extending from the high elevations along the east boundary from Cook City south to the Needle (a small number of males summer in the upper Lamar Valley to Saddle Mountain) westward to include the Mirror Plateau, Specimen Ridge and Upper Slough Creek all the way to the lower reaches of the Gardiner Basin at Yankee Jim Canyon. This sub-population breeds at the eastward end of their range and slowly moves down in elevation as the fall and winter months pass. By late winter and early spring the majority of the northern range group is located west of Tower and follows the chronology of spring green up conditions back to the high country for the July/August breeding period.

Bison tend to be observed in open grassland or shrub steppe habitats but due to the juxtaposition of these habitats in Yellowstone there are many travel corridors along rivers and over high elevation passes that provide connections to all of the major watersheds throughout the park. The bison population is more commonly found in the northern 2/3 of the park but small numbers (mostly males) move in to the Thoroughfare and portions of the Caldera between Lewis Lake and West Thumb. As late as the 1970's

there was a remnant group of bison that used the Pitchstone Plateau and portions of the Bechler Valley. That area has not been routinely monitored but use of meadows in this portion of the park would not be unexpected. A recent evaluation of potential habitat identifies the southern 1/3 of Yellowstone as suitable but not extensively occupied at this time.

Gray Wolf (*Canis lupus*): Gray wolves were native to the Greater Yellowstone Area when the park was established in 1872. Historically hunted for their hides and as predators, they were eliminated from the ecosystem by the 1930s. The USFWS released an EIS on wolf reintroduction in May 1994. In 1995 and 1996, 31 gray wolves from Canada were released in the park. A total of 14 wolves were released in the winter of 1994-1995; 17 additional wolves were released in 1996 (Phillips and Smith 1996). On May 5, 2011, the USFWS removed gray wolves in a portion of the Northern Rocky Mountain Distinct Population Segment (DPS) encompassing Idaho, Montana, and parts of Oregon, Washington, and Utah from the Federal List of Endangered and Threatened Wildlife. Gray wolves in Wyoming remain on the List of Endangered and Threatened Wildlife and continue to be subject to the provisions of our experimental population regulations codified at 50 CFR 17.84(i) and (n). Wolves reintroduced into YNP and central Idaho were classified ―nonessential experimental according to section 10(j) of the ESA of 1973, as amended (16 U.S.C. 1531). In national parks and wildlife refuges, nonessential experimental populations are treated as threatened species, and all provisions of Section 7 of the ESA apply (50 CFR 17.83(b)). The gray wolf was removed from the federal list of endangered and threatened wildlife and from Wyoming‘s wolf population‘s status as an experimental population effective September 30, 2012. The USFWS, NPS, and the states will monitor wolf populations in the Northern Rocky Mountain DPS and gather population data for at least five years. At the end of 2012, at least 83 wolves in 10 packs (6 breeding pairs) occupied YNP. This is roughly a 15% decline from the recent three years where the population had stabilized around 100 wolves. Breeding pairs declined slightly from eight the previous year. The wolf population has declined by about 50% since 2007 mostly because of a smaller elk population, the main food of northern range wolves. At the end of 2012, there were approximately 463 adult wolves in the GYA. At least one member of most packs is radio-collared, allowing NPS and USFWS personnel to monitor the movements of most packs.

Threatened and Endangered Species: *The species listed below are either federally listed as endangered or threatened. Candidate species are included above.*

Canada Lynx (*Lynx canadensis*); Status Threatened: The USFWS listed the Canada lynx as a threatened species in 2000. Lynx are considered rare in the Greater Yellowstone Area and are believed to use boreal or montane forests. Evidence of lynx in Yellowstone National Park comes from about 216 winter tracking surveys (conducted during winters of 2001-2004 and covering 1,043 total miles); from 118 lynx hair-snare transects deployed park-wide during the summers of 2001-2004, and from historic sightings. Park-wide, only four lynx sightings have been reported by visitors in the last 10 years. Surveys have documented one possible, two probable, and two definite cases of lynx presence, including a female accompanied by a kitten. Population numbers are unknown. Lynx prefer upper elevation coniferous forests in cool, moist vegetation types, particularly those that support abundant snowshoe hares, the primary food source for lynx. The best evidence of lynx presence is along the east shore of Yellowstone Lake. Critical habitat for lynx has also been designated for YNP and overlaps with Lynx Analyses Units through the park created in 2009.

The Fish and Wildlife Service designated critical habitat for lynx on February 27, 2009 (USFWS 2009). Five lynx critical habitat units were selected in the United States that provide adequate habitat elements for lynx. Unit #5 falls within the Greater Yellowstone Area (GYA) and is slightly over 6 million acres. Approximately 927,000 acres fall within Yellowstone National Park.

Wolverine (*Gulo gulo*); Status - Proposed for Threatened under ESA: The wolverine is a wide-ranging mustelid that naturally exists at low densities throughout much of northern and western North America (Beauvais and Johnson 2004). Wolverines are highly adapted to extreme cold and life in environments that have snow on the ground all or most of the year (Aubry et al. 2007). In the contiguous United States, these habitats are highly mountainous and occur at elevations above 8,000 feet (Copeland et al. 2007).

Overexploitation through hunting and trapping, as well as predator poisoning programs, likely caused wolverine populations to contract along the southern portion of their historical range in North America since the early 1900s (Banci 1994). However, recent surveys indicate wolverines are widely distributed in remote, montane regions of Idaho, Montana, Washington, and parts of Wyoming (68 FR 60113).

Wolverines have been detected in the Greater Yellowstone Ecosystem including the eastern, northern, and southern portions of the park (Beauvais and Johnson 2004; Copeland et al. 2007). Wolverines have protected status in Washington, Oregon, California, Colorado, Idaho, and Wyoming (Banci 1994). In Montana, wolverines are classed as furbearers and trapper harvests are managed through a quota system that limits the number of animals that can be taken. On February 4th, 2013, the USFWS proposed for the wolverine to be listed as threatened, moving it from candidate species category in the contiguous United States, with pending designation as threatened anticipated in late 2013.

Grizzly Bear (***Ursus arctos horribilis);*** **Status - Threatened:** A recovery plan for grizzly bear populations in the lower forty-eight contiguous United States was implemented because grizzly bears were listed in 1975 under the Endangered Species Act (USFWS 1982). The plan was developed to provide direction for the conservation of grizzly bears and their habitat to federal agencies responsible for managing land within the recovery zone. That same year, YNP completed an Environmental Impact Statement (EIS) for a grizzly bear management program specifically designed to recover the subpopulation of grizzly bears inhabiting the park (NPS 1983). Management of grizzly bears in YNP has been successful in enabling grizzly bear recovery and reducing bear-human conflicts (e.g., property damage, incidents of bears obtaining human food, bear-inflicted human injuries) and human-caused bear mortalities in the park (Gunther 1994, Gunther and Hoekstra 1998, Gunther et al. 2000, Gunther et al. 2004). The U.S. Fish and Wildlife Service removed grizzly bears in the Greater Yellowstone Ecosystem from the Federal List of Threatened and Endangered Wildlife on April 30, 2007. In 2009, a U.S. District Court returned the grizzly to the federal threatened species list, saying the Conservation Strategy was not enforceable and insufficiently considered the impact of climate change on grizzly food sources. The USFWS and the Department of Justice appealed. In 2012, a ruling was made to keep the grizzly bear on the federal threatened species list. The grizzly bear population in the GYA was estimated to range between 549 and 672 in 2012.

Methodology and Intensity Level Definitions

Impacts to USFWS Threatened and Endangered Species and Yellowstone Species of Management Concern are analyzed in this impact topic based on the knowledge of park resource specialists, current literature, and consultation with USFWS. The intensity of impacts to special status species are defined as follows:

Impact Intensity	Impact Description
Negligible	Adverse or beneficial impacts to individuals or population of threatened and endangered species or species of concern or to the species habitat that is not measurable or perceptible and would be unlikely to occur.

Minor	Adverse or beneficial impacts to individuals or population of threatened and endangered species or species of concern or to the species habitat that are measurable, small, and localized may occur. Short- or long-term disturbances to individuals or population and/or a small amount of habitat could be permanently modified or removed. Impacts would not measurably affect the migration patterns, or other demographic characteristic of the population (i.e., age/sex structure, recruitment rates, survival rates, movement rates, population sizes, population rates of change).
Moderate	Adverse or beneficial impacts to individuals or population of threatened and endangered species or species of concern or to the species habitat that are measurable, localized, and of consequence would affect a moderate portion of the species/range in the Park. Short- or long-term disturbances could measurably affect the migration patterns or other demographic characteristics of a population (i.e., age/sex structure, recruitment rates, survival rates, movement rates, population sizes, population rates of change). Impacts would not significantly increase the susceptibility of populations(s) in or near the Park to environmental or demographic uncertainties (e.g., severe winters, droughts, disease epidemics, and skewed age or sex ratios).
Major	Adverse or beneficial impacts to individuals or population of threatened and endangered species or species of concern or to the species habitats that are measurable, large, long-term, and cause a widespread change across the region. The susceptibility of populations(s) throughout the region to environmental or demographic uncertainty would significantly increase.

3.5.1 Impacts of Alternative A (No Action)

Seventeen special-status species exist in YNP, fourteen animals and three plant species. Since commercial saddle and pack use would not occur under the no action alternative, there would be no direct or indirect adverse impacts to these species.

Commercial saddle and pack users would not use the trails and camps, though use would continue by the public. The existing trail crossings of streams and stock watering sites would likely continue to be used, but by fewer stock than in the past. Based on 2012 commercial saddle and pack data, this alternative would reduce the amount of stock in the backcountry by 9,500 stock use days. However, as stated earlier, the absence of available stock outfitters would likely trigger an increase in day rides by Xanterra. Some sites might partially revegetate with the lower amount of use, thereby benefiting wildlife habitat. Due to the reduction of stock and humans in the backcountry and the reduced potential for disturbing these species, this alternative would have negligible beneficial effects to these seventeen species.

Cumulative Effects: Cumulative impacts on special status species are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in the Greater Yellowstone Area. Continuing construction projects in the developed areas of the park and the GYA would occur, but all moderate or major impacts on park special status species must be mitigated. Ongoing administrative activities such as road reconstruction and maintenance, backcountry operations, hazing activities, and facilities maintenance would continue to have adverse effects on special status species in the park. These would cause temporary displacement of special status species from generalized disturbance; feeding and resting behavior of wildlife species may be interrupted and some special status plant species may be adversely impacted from equipment working in construction areas. Use of trails and backcountry campsites and cabins could also temporarily displace or disrupt special status species. Effects from these activities would be direct, short-term, and negligible because of the limited duration of the activity. Hazing activities usually take place near developed areas where wildlife has become habituated to the presence of humans. The grizzly bear and wolf are the two species most likely affected

by hazing activities. Most facilities maintenance would take place in developed areas where minimal impacts to special status species would occur. However, adverse impacts to some species may occur because they are disturbed by noise and people associated with maintenance activities. Park visitation is expected to increase each year as a result of population growth in nearby communities and elsewhere. Past and ongoing recreational use such as fishing, camping, and hiking would continue park-wide. These activities could lead to negligible to minor adverse impacts because special status species can become disturbed from human activity. Outside of the park, recent hunting regulations for gray wolves would have an adverse effect on the population, but compliance with the individual state's wolf management plan would ensure genetic viability and survival of the species. Oil and gas drilling operations in the surrounding states would have an adverse impact on the four listed species.

Ongoing actions in YNP include the eradication of Lake trout. Reduction in Lake trout would likely lead to an increase in the Cutthroat trout population. Any increase in the Cutthroat trout population will benefit the Grizzly bear, allowing use of historical spawning streams for foraging.

Park visitation remains one of the major factors affecting the grizzly bear in the action area. In 2010, YNP recorded a record 3.6 million visitors. Average annual recreational visitation has increased each decade from an average of 7,378 visitors/year during the late 1890s to 3,300,000 visitors/year in the 2000s. The decade 2000-2009 was the first in history of the park that visitation did not increase from the previous decade. Average annual backcountry user nights have remained fairly static since the 1970s, ranging from 39,280 to 45,615 user nights. In addition to the potential increase in human-wildlife interactions, vehicle traffic may impact special status species directly (injury or death) or indirectly by altering behavior (displacement and avoidance).

Vegetation removal would occur around backcountry cabins, other developed areas in the park, utility right-of-ways, and development outside of the park as well as for the 1992 Park-wide Road Improvement Plan. While wildlife mortality would not be expected from these projects, wildlife would be displaced. Invasive plant species could be introduced into the park during these projects, reducing the amount of native plants found within the Park boundaries which provide food and habitat for fish and wildlife. The Vegetation Management Guidelines for Construction Disturbance in Yellowstone National Park, the Invasive Vegetation Management Plan, and the Greater Yellowstone Area Whitebark Pine Strategy would be followed to minimize adverse effects on special status wildlife and vegetation species and habitat.

Erosion and sedimentation of surface water from construction during development of these projects could have adverse effects on surface water, and thus fish and aquatic habitat. Additional impacts could occur from erosion of hiking trails, runoff from the roads, and accidental fuel spills. There are also impacts on individual fish from the heavy recreational fishing; however, the fisheries are managed so as not to adversely affect overall fish populations.

Cumulative effects to special status species from such actions would be minor and adverse. While some individuals and groups would be displaced, overall wildlife populations would not be jeopardized. Alternative A would contribute minor, adverse cumulative impacts on special status species. Combined with known past, current and future projects and actions, there would be minor, adverse cumulative impacts on special status species.

3.5.2 Impacts of Alternative B

Seventeen special-status species exist in YNP, fourteen animals and three plant species. This alternative would continue commercial saddle and pack use. The continuation of this use would disturb special status species and alter habitat, particularly on trails and at campsites.

Many of the visitor use and management actions that are currently affecting special status species would remain the same. Management actions and strategies associated with this alternative that would have the potential to affect wildlife include trail maintenance and monitoring.

Abundant habitat exists away from the campsites, so forest-dwelling species as a whole would be largely unaffected. Overnight commercial stock use is not allowed until July 1st, which reduces conflicts with wildlife species, particularly during calving. Meadows adjacent to existing camps would continue to be grazed at approximately the same intensity as in the recent past. Impacts to meadow habitat would be limited to a few heavily used sites and occurring on a small portion of the landscape. Yellowstone sand verbena grows along the shore of Yellowstone Lake and Ross' bentgrass, occurs in geyser basins, both areas are restricted from stock use. During loose grazing, whitebark pine saplings may be trampled by stock.

In accordance with 36 CFR §1.5(a)(2) and the 2012 Superintendent's Compendium, visitors are prohibited from willfully approaching, remaining, viewing, or engaging in any activity within 100 yards of bears or wolves, or within 25 yards of any other wildlife including nesting birds, or within any distance that disturbs, displaces, or otherwise interferes with the free unimpeded movement of wildlife, or creates or contributes to a potentially hazardous condition or situation. The feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities are also prohibited by 36 CFR §(a)(2). YNP food storage and trash regulations would mitigate impacts of wildlife seeking food at campsites. The Superintendent's Compendium states that "Concessions permittees operating in the backcountry must suspend all food, garbage, stock feed, cooking utensils and stoves (except clean and sanitized utensils and stoves), ice chests and any scented articles at least 10 feet off the ground and at least 4 feet from tree trunks at night and/or when not in use or attended" and, "In all areas, food, garbage, and equipment used to cook or store food, when not in use or attended**,** must be sealed in a vehicle or camping unit made of solid, non-pliable material or suspended at least 10 feet above the ground and 4 feet horizontally from a post, tree trunk, or other object."

Trails are temporarily closed to limit impacts to some species (e.g., nesting trumpeter swans, wolf den, raptor nesting, etc.). Commercial stock use could disturb a wolf den or rendezvous site. However, disturbance would more likely be caused by use occurring off maintained trails and outside of popular areas since wolves tend to establish den and rendezvous sites in remote areas. The trumpeter swan, bald eagle, peregrine falcon, white pelican, bison, pronghorn, and boreal toad may be disturbed during commercial saddle and pack tours but since the species are mobile and nesting areas are closed off, the effects would be negligible. Boreal toads are less mobile and could be trampled. Any effects to these species would be negligible to minor, both short- and long-term.

While stream crossings do temporarily raise sediment levels and promote erosion on stream banks, the effects would be short-term and well within the natural range in YNP. The effects on Yellowstone cutthroat trout, westslope cutthroat trout, and arctic grayling would be negligible.

The special status species within YNP would generally remain undisturbed and would be managed under the existing master, resource, and fire management plan provisions for wildlife species; therefore, there would be short- and long-term, negligible to minor adverse impacts to special status species.

The effects on the federally listed species (i.e., Canada lynx, grizzly bear, and whitebark pine) are evaluated below.

Canada Lynx: The amount of habitat that could possibly be disturbed by commercial stock use on trails and backcountry campsites is negligible and therefore has no effect. These campsites and trails have been in existence for decades and are mostly in open meadows or areas where the habitat modification

occurred years ago. Beyond annual trail maintenance, no habitat modifications in the backcountry are being proposed.

Commercial saddle and pack tours operate from May to October, almost exclusively on formal trails in YNP. Winter recreational activities have the most effect on lynx habitat (USFWS 2009). As stated in the 2009 Environmental Assessment for designation of lynx critical habitat, "Recreational facilities designed for summer use have very little effect on lynx (Ruediger et al. 2000)." Based on the limited sightings/encounters for lynx and the fact that the proposed action is a continuation of action that has occurred for over 100 years, the NPS has determined that the proposed action will have "**no effect"** on Canada lynx.

Adverse modification of critical habitat is defined as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." Therefore, an analysis for adverse modification must be applied at a survival and recovery scale. As mentioned above, no habitat modification will occur in Yellowstone's backcountry. The proposed action will not impact a measurable amount of the critical habitat in Unit #5, nor affect the function of the critical habitat unit and the Primary Constituent Elements (i.e., snowshoe hare and denning habitats, and matrix conditions). Therefore, the NPS expects that the proposed project activities will have **"No Effect"** on Designated Critical Habitat for the Canada Lynx.

Grizzly Bear: Potential effects to grizzly bears from the proposed action are: (1) harassment, harm, or death; (2) changes in the quality of habitat and availability of food; (3) displacement from habitat; and (4) change in the frequency of human-grizzly encounters.

In accordance with the revised Grizzly Bear Recovery Plan, the percent of secure habitat within the Bear Management Units would not be affected. Direct effects of the proposed action may include human-grizzly conflicts in the backcountry, particularly at campsites. Even with mitigation measures in place there is always the possibility of a human-grizzly encounter at these campsites. In accordance with the concessions contracts, commercial saddle and pack outfitters must abide by the conservation measures listed in Section 2.2.

As described in the affected environment section, grizzly bears are opportunistic feeders and will prey or scavenge on almost any available food. This behavior can place grizzlies in direct conflict with humans. Commercial saddle and pack stock outfitter's have access to 100 designated campsites throughout YNP. These camps involve tents, food, supplies, stock, and are centers for attractants such as human and livestock food which may potentially food condition grizzlies. With implementation of the conservation measures the potential for a grizzly-human conflict is reduced. However, the potential still exists. There is also the potential that a conflict could lead to a grizzly mortality. The intentional killing of a bear in defense of property associated with commercial stock camps and defense of human life during direct human/bear confrontations could occur. Direct mortality could also occur during NPS control of nuisance bears, and is the more likely scenario. Live removal of a grizzly to a zoo or another ecosystem as part of nuisance bear management is also considered a mortality because individual relocated bears are no longer part of the population. Commercial day stock use has much less likelihood for conflict as there is little stockpile of human and livestock foods.

Potential effects to grizzly bears from the proposed action are: (1) in rare circumstances, death from the management removal of bears that become conditioned to human foods, or the remote possibility of defense of life and property kills by commercial outfitters; (2) negligible changes in the quality of habitat due to soil compaction and introduction of exotic plant species in areas around campsites grazed by stock, (3) negligible changes in food availability due to interspecific competition with stock for grazing resources; (4) short term temporary displacement from habitat; and (5) minor changes in the frequency of

human-grizzly encounters. The NPS has determined that the proposed action would have minor, short- and long-term adverse impacts to the grizzly bear.

Whitebark Pine: Implementation of the *Mitigation Measures* listed in Chapter 2 would minimize potential effects to whitebark pine. Stock users are prohibited from tying stock to trees, picketing to standing trees, and must also use padded hitching lines. Trampling of seedlings is always a possibility, but since a majority of commercial saddle and pack outfitters use designated trails, the likelihood is minimal. Under alternative B, impacts to whitebark pine are expected to be negligible, short- and long-term adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to special status species.

3.5.3 Impacts of Alternative C (Preferred Alternative)

Impacts to special status species under Alternative C would be the same as those listed under Alternative B. Implementation of the monitoring-based management actions would displace commercial stock users to other trails and campsites in the park, negating any benefit from non-use. Trail and campsite closures for sensitive species (i.e., nesting trumpeter swans, grizzly activity, etc.) would occur regardless of which alternative were chosen. For the above reason and the reasoning in Alternative B, impacts from this alternative would be short- and long-term negligible to minor adverse to all species.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to special status species.

3.6 Wilderness

Affected Environment

The establishment of the 1964 Wilderness Act provided for the protection of wilderness areas for future generations. With completion of the Final Environmental Statement: Proposed Wilderness Classification, Yellowstone National Park, Wyoming (NPS, 1973) NPS recommended 2,032,721 acres in 10 road less units in Yellowstone be designated as wilderness, and 6,040 acres as potential wilderness by an act of Congress, for a total of 90 percent of the park. The remaining nine percent of the park is classified as administrative and facilities, developed areas, and roads. Even though the wilderness has not been formally designated, the recommended wilderness is managed so as not to preclude designation.

The Wilderness Act and NPS Policy

Section 4 of the Wilderness Act describes authorized uses of wilderness areas. Subsection 4(a) declares, with specific legislative references, that the Wilderness Act shall be supplemental to the purposes for which national forests, parks, and refuges have been established.

Subsection 4(b) states in part, "Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character." Thus, except for specified provisions in the legislation, wilderness areas shall be devoted to recreational, scenic, scientific, educational, conservation, and historical uses.

Subsection 4(c) prohibits certain uses (unless specifically provided elsewhere in the Act) inconsistent with wilderness preservation. With the exception of the minimum actions needed for administrative duties and emergency health and safety procedures, the Act prohibits temporary roads, motor vehicle use, motorized equipment or motorboats, landing of aircraft, mechanical transport, structures, and installations.

Chapter 6 of NPS Management Policies states in part: "The National Park Service will take no action that would diminish the wilderness eligibility of an area possessing wilderness characteristics until the legislative process of wilderness designation has been completed. Until that time, management decisions will be made in expectation of eventual wilderness designation.

NPS wilderness management policy requires management decisions be consistent with a minimum requirement concept. When determining minimum requirement, potential disruptions of wilderness character and resources will be considered. The minimum requirement concept applies to all administrative activities. The park has established minimum requirement protocols to document decisions related to administrative activities.

Wilderness Character
Subsection 2(c) of the Wilderness Act defines wilderness as follows:

A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.

The same subsection 2(c) further defines wilderness as having the following characteristics:

- Undeveloped land retaining its primeval character in influence without permanent improvements or human habitation;
- Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- Has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- May contain ecological, geological, scientific, educational, scenic, or historical value.

This EA adopts definitions and concepts developed through an interagency process to establish a framework for monitoring conditions related to wilderness character (Landres 2005). All wilderness areas, regardless of size, location, or any other feature, are unified by the statutory definition.

Wilderness stewardship planning is ultimately focused on the preservation of wilderness character, the primary mandate of the 1964 Wilderness Act. NPS and Interagency policy and guidance identify distinct and necessary "qualities" of wilderness character. These qualities are tangible, link conditions in the wilderness and its management directly to the statutory language of the Wilderness Act, and apply to every wilderness regardless of size, location, agency administration, or other attribute. There are five qualities of wilderness character, all equally important in understanding and describing wilderness character and all based on the Wilderness Act's Section 2(c) Definition of Wilderness:

Natural—Wilderness ecological systems are substantially free from the effects of modern civilization. This quality is preserved or improved, for example, by controlling or removing non-indigenous species or restoring ecological processes. This quality is degraded by the loss of indigenous species, occurrence of nonindigenous species, alteration of ecological processes such as water flow or fire regimes, effects of climate change, and many others.

Untrammeled—Wilderness is essentially unhindered and free from the intentional actions of modern human control or manipulation. This quality is influenced by any activity or action that intentionally controls or manipulates the components or processes of ecological systems inside wilderness. It is supported or preserved when such management actions are not taken. It is degraded when such management actions are taken, even when these actions are intended to protect resources, such as spraying herbicides to eradicate or control non-indigenous species, or reducing fuels accumulated from decades of fire exclusion.

Solitude or a Primitive and Unconfined Type of Recreation—Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation. This quality is primarily about the opportunity for people to experience wilderness, and is influenced by settings that affect these opportunities. This quality is preserved or improved by management actions that reduce visitor encounters, signs of modern civilization inside wilderness, agency-provided recreation facilities, and management restrictions on visitor behavior. In contrast, this quality is degraded by management actions that increase these.

Undeveloped—Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation. This quality is influenced by what are commonly called the "Section 4(c) prohibited uses" or "nonconforming" uses, which are the presence of modern structures, installations, habitations, and the use of motor vehicles, motorized equipment, or mechanical transport. This quality is preserved by the absence of structures and installations, and refraining from these prohibited uses. It is degraded by the presence of structures and by prohibited uses, whether by the agency for administrative purposes, by others authorized by the agency, or unauthorized uses. (Note that structures and installations related to visitor use and recreation are included in the Solitude Quality rather than the Undeveloped Quality.)

Other Features of Value—Wilderness preserves other tangible features that are of scientific, educational, scenic, or historical value. This quality is based on the last clause of Section 2(c) of the Wilderness Act which states that a wilderness "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." This quality captures important elements of the wilderness that aren't covered in the other four qualities, such as cultural or paleontological resources. This quality is preserved or improved when these resources are preserved and their loss or impacts to such features degrade this quality of wilderness character. Other features of value have not yet been defined for YNP.

Together, these five qualities comprise the tangible or physical setting of the wilderness and its wilderness character. These five qualities interact in direct and subtle ways that may complement or conflict with the others. For example, allowing a natural fire ignition to burn preserves both the natural and untrammeled qualities of a wilderness. In contrast, suppressing a natural ignition degrades the untrammeled quality, the use of helicopters or other motorized equipment degrades the undeveloped and solitude qualities, and the long-term effects of suppression may degrade the natural quality. A decision to protect or improve one quality of wilderness character may directly degrade another quality. For example, designated campsites may be necessary to protect solitude or prevent vegetation trampling, but degrades other elements of the solitude quality by requiring visitors to camp only in designated sites.

Methodology and Intensity Level Definitions

Impact analyses on wilderness were based on information obtained from interdisciplinary team members and relevant literature. The impact thresholds for air quality are defined as follows:

Impact Intensity	Impact Description

Negligible	Impacts have no discernible effect on wilderness character. Natural conditions prevail. No permanent visual improvements or human occupation; outstanding opportunities for solitude or a primitive and unconfined type of recreation.
Minor	Impacts slightly detectable within limited areas of the wilderness. Natural conditions predominate. No permanent visual improvements or human occupation. While there might be short-term impacts within the wilderness, over the long term, outstanding opportunities for solitude or a primitive and unconfined type of recreation prevail, but may vary by season.
Moderate	Impacts readily apparent within limited areas of the wilderness. Apparent that humans have altered natural conditions within such areas. No permanent visual improvements or human occupation. Outstanding opportunities for solitude or a primitive and unconfined type of recreation restricted in limited areas and during limited times of year.
Major	Impacts substantially alter the wilderness resource throughout the wilderness area. Natural conditions substantially altered by humanity. Improvements made by people, while not permanent, long-term and part of the landscape. Outstanding opportunities for solitude or a primitive and unconfined type of recreation restricted throughout the wilderness.

3.6.1 Impacts of Alternative A (No Action)

There would be no saddle and pack stock outfitter guides under Alternative A. This alternative could result in a slight improvement in wilderness character, specifically in the natural quality and opportunities for solitude. It would not provide the commercial services necessary for wilderness appropriate recreation. The elimination of saddle and pack stock outfitter guides would reduce impacts from grazing, and slightly improve water quality, and slightly reduce stream bank erosion and soil impacts at stock watering and gathering locations. There would be localized improvements in the opportunities for solitude at some established campsites because the reduction in the sights and sounds of people would make the areas feel more remote. Opportunities for solitude or primitive and unconfined recreation would also improve since the number of saddle and pack stock users in the backcountry would be reduced. People needing the services of saddle and pack stock outfitter guides would not be able to travel into the wilderness and benefit from the opportunities for solitude, or primitive and unconfined recreation.

Natural-This alternative would have no effect on the natural quality of recommended wilderness. Commercial saddle and stock use would not occur and would not add effects of modern civilization to the backcountry.

Untrammeled-Cessation of commercial saddle and stock use would have no effect on the untrammeled quality of the recommended wilderness. The park would, however continue to manage use in the backcountry.

Solitude or a primitive and unconfined type of recreation-The reduction of stock and users on the trails and campsites would have a beneficial effect on solitude, but have no effect on a primitive or unconfined type of recreation. The number of encounters on trails would be reduced, and would be most noticeable in the portions of the backcountry more frequently used by the saddle and pack outfitters. Impacts within stock containment areas in campsites currently used by commercial saddle and pack outfitter-guides could potentially reduce in size, since the average private user has less stock than commercial groups. This would have a beneficial effect on opportunities for solitude because of the improvement in camp conditions, especially in the amount of barren core. There would be no loose grazing outfitted stock, however private stock users may still use this technique since it minimizes impacts, and is the suggested method in Leave-No-Trace principles. There would be a reduction in the number of animals grazing,

however, so encounters with stock away from camps or on trails, stock traveling though occupied campsites, and the sound of bells on loose grazing herds would all be reduced. This would have a beneficial impact on opportunities for solitude. This alternative would not provide the commercial saddle and pack stock services needed for persons with disabilities who wish to experience solitude or a primitive and unconfined type of recreation

Undeveloped-The number and type of facilities and management activities in the recommended wilderness would remain unchanged and therefore have no effect on the undeveloped quality of the recommended wilderness.

Overall, the environmental effects of Alternative A would be minor, short- and long-term, beneficial and adverse.

Cumulative Effects: The spatial boundary for the cumulative effects analysis is YNP and the surrounding national forests. Wilderness character in stock-use areas throughout the park has been impacted by use of mechanized equipment in and adjacent to proposed wilderness, maintenance of trails and campsites, general human presence and recreation, and aircraft overflights. These impacts are generally minor, short-term adverse.

Recently implemented, in-progress, and foreseeable future projects have potential to affect wilderness include the routine maintenance of trails and restrooms, aircraft overflights, and fire management activities. Minimum requirement analyses are completed for those projects that occur in recommended wilderness or have potential to impact wilderness character.

The NPS maintains between 10 and 20 miles of trail segments each year. This maintenance allows people to access the most popular destinations in the backcountry. Providing maintained trails concentrates use on those trails, but leaves the vast majority of recommended wilderness untouched, creating a beneficial impact on the opportunities for solitude in the wilderness.

Human developments located in wilderness at Yellowstone are relatively small and the cumulative effects on the resources and values of the vast area of wilderness at the Park are minimal. Forty-one patrol cabins are present in the recommended wilderness with approximately thirty-two deemed eligible for listing under the National Historic Preservation Act. The effect of the patrol cabins is negligible and local, impacting the undeveloped quality of the wildernesses. They can be an intrusion on a visitor's experience, however most patrol cabins are not visible to backcountry users. Some user's visit may be enhance by the historic cabins, or not perceived to be in contrast to the environment. Aircraft used to access these sites for maintenance, as well as aircraft used for research within the Park, contribute to the disruption of solitude. In addition to the recommended wilderness area in the Park, 70 percent of the National Forest that borders over half of the Park boundary is managed as designated wilderness. Park wilderness management, in combination with wilderness plans implemented on adjacent Forest Service lands, would, in the long-term, provide increased resource protection and preservation of wilderness in the region.

It is reasonably foreseeable that restoration activities (i.e., bear pole replacement, bare ground restoration, etc.) would continue on existing campsites. The type and intensity of the restoration would depend on the NPS budget, but these activities would continue to have minor, beneficial effects on the opportunities for solitude.

Wildland fires are expected into the future. Fire suppression activities such as fire line and helispots would continue. These would be rehabilitated, but the continued fire suppression would adversely impact the untrammeled and natural qualities of the wilderness.

The cumulative impact on recommended wilderness from such actions would be adverse and minor. Alternative A, in conjunction with these past, present, and reasonably foreseeable actions would result in minor, short- and long-term adverse impacts to wilderness.

3.6.2 Impacts of Alternative B

Continued commercial saddle and pack use in YNP would have direct and indirect effects on wilderness. This alternative would provide the commercial services necessary for wilderness appropriate recreation. Natural quality and opportunities for solitude would be negatively affected due to commercial stock in the backcountry and the potential for visitor encounters. The impacts in the above sections (i.e., grazing, compaction, erosion, water quality, stream bank damage) would continue, affecting natural quality. The sights and sounds of commercial stock use may make backcountry areas feel less remote.

Natural- Impacts to natural and cultural resources would continue as described in those sections of this document. Human and stock use would continue in proposed wilderness areas as described in this document. As stated in the other resource sections, impacts to ecological systems would be minor.

Untrammeled- Continuation of current commercial stock use in recommended wilderness would not result in manipulation or control of ecological systems in proposed wilderness. Therefore, negligible impacts would occur to the untrammeled nature of proposed wilderness.

Solitude or a primitive and unconfined type of recreation- Impacts to visitor use and experience would continue as described in this document. Proposed commercial stock use would not result in long-term impacts to natural sights and sounds, solitude, risk adventure, or other attributes of recommended park wilderness. However, potential encounters with stock users could result

Undeveloped- The number of facilities and maintenance activities in recommended wilderness would remain the same. Trail maintenance would also occur under this alternative to support commercial stock use. Impacts to the undeveloped nature of proposed wilderness would be minor, short- and long-term.

Overall, the environmental effects of Alternative B would be minor, short- and long-term beneficial and adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to wilderness.

3.6.3 Impacts of Alternative C (Preferred Alternative)

Impacts to wilderness under Alternative C would be the same as those listed under Alternative B. Implementation of the monitoring-based management actions would displace commercial stock users to other trails and campsites in the park, negating any benefit from non-use. For the above reason and the reasoning in Alternative B, impacts from this alternative would be short- and long-term, minor, both beneficial and adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to wilderness.

3.7 Archeological Resources

Affected Environment

The National Historic Preservation Act, as amended in 1992 (16 USC 470 et seq.), the National Environmental Policy Act, NPS Director's Order 28, Cultural Resource Management Guideline (NPS 1997), Management Policies (NPS 2006), and NPS Director's Order 12, Conservation Planning, Environmental Impact Analysis and Decision-making (NPS 2011), all require the consideration of impacts on cultural resources listed in, or eligible for listing in, the National Register of Historic Places (National Register). The park's archeological sites provide evidence of human occupation for approximately 12,000 years. These tangible remains are vital to understanding past cultures without written records and provide the basis for continued scientific research. Approximately 3% of the park has been archeologically inventoried, with more than 1,700 archeological sites recorded. Most recorded sites are in developed areas because archeological evidence has been discovered there inadvertently or as part of National Historic Preservation Act compliance related to construction activities and hazard fuel reduction projects. Salvage efforts have been made at some sites where archeological remains are especially vulnerable to disturbance or loss through erosion or illegal collecting. Multiple significant sites in the park are eligible for or listed on the National Register of Historic Places. These archeological sites date from all periods of prehistory, and can include isolated artifacts, short term extractive sites such as seasonally occupied hunting or gathering camps, human burials, raw material quarries, hunting blinds, wickiups, stone circles, and others. Sites from the historic period also exist, including those associated with tourism and the military period such as including building foundations, camps, trails, roads, sunken watercraft, cemeteries, trash dumps, and many other site types. Many of these contribute information important to understanding local or regional human history. The Obsidian Cliff National Historic Landmark archeological site is considered important at the national level. Approximately 940 miles of trails in the park have been approved for stock use. Sites have been recorded across approximately 40.3 miles of these trails.

Methodology and Intensity Level Definitions

In this environmental assessment, impacts on cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council of Environmental Quality (CEQ) that implement NEPA. These impact analyses are intended to comply with the requirements of both NEPA and §106 of the National Historic Preservation Act, as amended (NHPA), and the regulations implementing NHPA found at 36 CFR 800.

Federal agencies are required to consider the effects of their proposed actions on properties listed in, or eligible for inclusion in, the National Register of Historic Places (NRHP), and allow the Advisory Council on Historic Preservation a reasonable opportunity to comment. While engaged in any federal or federally assisted undertaking, agencies are also required to consult with federal, state, local, and tribal governments/organizations, to identify historic properties within the area of potential effect, to assess effects to historic properties, and to negate, minimize, or mitigate adverse effects to historic properties (36 CFR 800).

As per 36 CFR 800, the agency must make a determination of effect for NRHP listed or eligible cultural resources. A determination of adverse effect is made by the agency when it finds that adverse effect to historic properties will occur. Adverse effects to historic properties are those which may "alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association" (36 CFR 800.5). Adverse effects may include reasonably foreseeable effects caused by the alternatives that would occur later in time, be farther removed in distance, or be cumulative. A determination of no adverse effect is made when the agency determines that there is an effect to historic properties, but the effect is not adverse 36 CFR

800.5(b). A determination of no effect would be made if no historic properties would be affected by the undertaking (36 CFR 800.4(d)(1)).

The CEQ regulations implementing NEPA and the NPS's Conservation Planning, Environmental Impact Analysis and Decision Making (Director's Order #12) also call for a discussion of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. It is important to note that the definition for adverse impacts per NEPA is not strictly correlated with the definition of adverse effects per 36 CFR 800. It is possible to have adverse impacts under NEPA which do not rise to the level of adverse effect per 36 CFR 800. Conversely, any reduction in intensity of impact due to mitigation is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by 36 CFR 800 is similarly reduced. If actions are determined to have an adverse effect under 36 CFR 800 and may be mitigated, the level of effect as defined by 36 CFR 800 remains adverse.

For purposes of analyzing impacts on archeological resources either listed in or eligible to be listed in the National Register, the intensity of impacts are defined as follows:

Impact Intensity	Impact Description
Negligible	Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for §106 would be *no effect*.
Minor	The disturbance of a site(s) results in little, if any, loss of integrity. The determination of effect for §106 would be *no adverse effect*.
Moderate	The disturbance of a site(s) results in loss of integrity. The determination of effect for §106 would be *adverse effect*. A memorandum of agreement is executed among the National Park Service and applicable state and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts reduce the intensity of impact under NEPA from major to moderate.
Major	The disturbance of a site(s) results in loss of integrity. The determination of effect for §106 would be *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed upon and the National Park Service and applicable state and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

3.7.1 Impacts of Alternative A (No Action)

Since Alternative A would eliminate commercial saddle and pack use in the park there would beneficial impacts to archeological resources from this use. The potential for impacts from stock trampling would decrease. Other backcountry users would continue impact this resource. Alternative A would have a minor, short- and long-term beneficial effect on archeological resources.

Cumulative Effects: Cumulative impacts on archeological resources are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in the Greater Yellowstone Area. There has been a complex inter-layering of human influences in the study area. Humans have used this site for approximately 12,000 years. Any disturbances that may have been caused by early cultures on the archeological resources of the culture that came before is part of the archeological record and not considered an adverse effect; however there is no evidence to date that this has occurred. Visitors and the NPS have consistently inflicted change to the facilities, thus impacting at some level archaeological resources during the last 140 years, causing adverse impacts. Early roads, power lines, buildings, walkways, trails, and buried utilities have been built right through archeological resources.

Maintenance and repair of these facilities, especially by heavy equipment, has caused further damage. In addition, as time goes on, surface archaeological resources could be subject to damage from vandalism, visitor access, and natural processes such as erosion and weathering. Data loss and minor degradation of site integrity could occur for archaeological resources currently located in areas frequented by park visitors, in areas vulnerable to natural erosion processes or affected by past park development.

Park archeological resources have been impacted by development that has changed the way the area is used today. Past development has likely impacted area archeological resources. Loss or disturbance of these resources (in conjunction with previous losses and prevailing threats to finite numbers of these resources throughout the region) incrementally diminishes overall understanding of YNP's cultural history.

Recently implemented, in-progress, and foreseeable future projects with potential to affect archeological resources include trail maintenance, road reconstruction, other park infrastructure improvements, and wildland fire management. All park projects are assessed for potential effects to these resources, as required by NHPA. Consultation with the State Historic Preservation Officer (SHPO) and park cultural resource staff would ensure adverse impacts of future projects on archeological resources would be avoided, minimized, or mitigated. Therefore, when combined with Alternative A, cumulative impacts to archeological resources would be minor, long-term adverse. The agency determination of effect under NHPA would be no effect on historic properties.

3.7.2 Impacts of Alternative B

Most commercial saddle and pack stock use occurs on established trails throughout the park. This use has occurred for over a century, and potential to disturb unknown archeological resources is very low. With a few exceptions, commercial saddle and pack outfitters would be required to camp in existing, authorized locations, and would be prohibited from increasing the amount of barren core in any campsite or constructing new trails. This would avoid new ground disturbance. The mitigation measures included in Section 2.1.3 address discovery of unknown archeological or ethnographic resources during project implementation. Impacts to archeological resources would be minor, short- and long-term adverse. The agency determination of effect under NHPA would be no adverse effect on historic properties.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to archeological resources.

3.7.3 Impacts of Alternative C (Preferred Alternative)

Impacts to archeological resources under Alternative C would be the same as those listed under Alternative B. Implementation of the monitoring-based management actions could result in displacement of commercial stock use to other trails and campsites in the park, negating any benefit from non-use. However, closures may benefit sensitive archeological sites. Mitigation measures included in Section 2.1.3 address discovery of unknown archeological or ethnographic resources during project implementation. The agency determination of effect under NHPA would be no adverse effect on historic properties. For the above reason and the reasoning in Alternative B, impacts from this alternative would be short- and long-term negligible to minor adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to archeological resources.

3.8 Socioeconomic Resources

Affected Environment

Social and economic environments are primarily affected by changes in visitor levels, visitor spending, park and concessioner employment, and park and concessioner spending in the economy. Yellowstone National Park extends into three different states, including Wyoming, Montana, and Idaho. Most of the property surrounding the park is managed by the U.S. Forest Service and a few private land owners. The park plays a prominent role in the social and economic life of the Greater Yellowstone Area. The greater Yellowstone region's economy has grown and diversified dramatically in the past forty years. The trend near the park has lessened from a heavy dependence on resource extraction and agriculture toward a service-based economy, with significant growth also coming from retirement and investment income. In comparison to other economies' near large parks (North Cascades, Glacier, Yosemite, Grand Canyon), the greater Yellowstone region has the fastest rates of population in economic growth, but lags behind in the growth of average job wages.

According to a recent NPS report, in 2010 the 3.64 million visitors spent over $334 million in YNP and in local communities. The spending supported nearly 4,900 jobs in the local area. Most of the spending and jobs were related to lodging, food, and beverage service (52 percent) followed by other retail (29 percent), entertainment/amusements (10 percent), gas and local transportation (7 percent), and groceries (2 percent) (Cui et al, 2011). Currently, YNP averages $65,000 per year in stock outfitter franchise fees. Twenty percent of this goes to the National Park Service in Washington D.C and 80 percent returns to YNP. The 80 percent returned to YNP becomes part of the overall general fund.

Gateway communities of varying sizes have developed outside the park-Cody, Dubois, and Jackson in Wyoming and Cooke City/Silvergate, Gardiner, and West Yellowstone in Montana. The Montana gateway communities are on the immediate border of the park or within a few miles; the Wyoming gateway communities are an hour drive or more from the park boundary. The gateway communities are relatively small, with populations ranging from less than 150 permanent residents for Cooke City and Silvergate combined to almost 9,000 for Cody. The population of West Yellowstone is approximately 1,200 and Gardiner has approximately 850 residents; however the population increases during the summer months with an influx of seasonal workers.

Economic activities supported by visitor use are highly seasonal. June, July, and August are the months of highest use; with 50 percent of the park's visitation arriving in July and August. The availability of visitor services varies from community to community. Yellowstone's recreational opportunities tend to create a tourist-based economy in communities surrounding the park. These communities receive much of their income by providing goods and services to park visitors and employees. Local businesses also benefit from annual NPS and concessioner expenditures for salaries, goods, and services.

Methodology and Intensity Level Definitions

Available information on socioeconomics was obtained from NPS and concessioner staff. The intensity of impacts to socioeconomics are defined as follows:

Impact Intensity	Impact Description
Negligible	No effects would occur or the effects to socioeconomic conditions would be below or at the level of detection. The effect would be slight and no long-term effects to socioeconomic conditions would occur.

Minor	The effects to socioeconomic conditions would be detectable, although short-term. Any effects would be small and if mitigation were needed to offset potential adverse effects, it would be simple and successful.
Moderate	The effects to socioeconomic conditions would be readily apparent and likely long-term. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.
Major	The effects to socioeconomic conditions would be readily apparent, long-term, and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.

3.8.1 Impacts of Alternative A (No Action)

There would be no commercial saddle and pack outfitters permitted under Alternative A and therefore no economic contribution from these businesses. Business' that use YNP for a majority of their trips would be most affected. This would result in fewer jobs in GYA, and a reduction in labor income and total sales, however these loses would only occur if there were no other opportunities for employment and income in the area to substitute for the loss of outfitter guide concession contracts. The park would not receive a return from any franchise fees associated with commercial stock outfitter services.

Annual trips in YNP	Number of Stock Outfitters
0-10 trips	24
11-20 trips	11
21-30 trips	3
31-40 trips	1
41-50 trips	1
51+ trips	4

Figure 3-2 Annual Stock Outfitter Trips in YNP

Alternative A would have a more pronounced effect on those outfitters that rely on YNP for a large part of their guiding business. Stock outfitters could offer trips outside of park boundaries. However, some providers may be dependent on providing services in the park Stock outfitter business' that are not able to relocate or find other suitable areas for stock trips may close, thereby negatively affecting the local economy.

Overall, Alternative A would have a minor, short- and long-term adverse impact to socioeconomic resources.

Cumulative Effects: Ongoing administrative activities would continue throughout the park. Areas with road construction may contribute direct short-term, minor adverse impacts to socioeconomics. These projects may cause traffic to be delayed or rerouted in the park. This could cause visitors to alter or adjust travel plans which may affect local businesses. Park visitation is expected to increase each year as a result of population growth in nearby communities and elsewhere. Therefore, visitor expenditures (lodging, fuel, groceries, dining, gifts) would also be expected to increase annually. Past and present actions in Yellowstone are not known to have directly impacted the commercial stock outfitters, lodging, or other businesses (food, fuel, fishing, wildlife viewing, and outdoor gear). Future impacts to commercial stock outfitters, lodging, or other businesses could result if visitation were to increase to the point of limiting the availability of trail usage, backcountry campsites, or lodging, resulting in a minor adverse impact. The cumulative effects of these past, present, and reasonably foreseeable future actions

on socioeconomics are minor and beneficial. When added to these other actions, Alternative A would have direct and indirect, long-term, minor beneficial impacts to socioeconomics.

3.8.2 Impacts of Alternative B

Alternative B would continue commercial stock use and have a minor, short- and long-term beneficial effect on socioeconomic resources. Issuing up to 44 contracts for commercial saddle and pack use would be a continuation of the status quo. Although the issuing of contracts would continue commercial stock outfitter service in the park, it is quite difficult to attribute any decreased or increased monetary value to the surrounding area economy. A continuation of the number of commercial stock outfitter contracts authorized in the park would not affect the number of employed guides. This Alternative would also allow outfitter businesses to be flexible by offering last minute day rides when needed, such as during peak visitation periods.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term beneficial impacts to socioeconomic resources.

3.8.3 Impacts of Alternative C (Preferred Alternative)

Alternative C would have little to no effect on socioeconomic resources. Issuing up to 44 contracts for commercial saddle and pack use would be a continuation of the status quo. Implementation of monitoring based management actions may affect commercial outfitters who have to drive long distances to reach the park. Commercial outfitters must account for travel time and fuel costs when planning trips. If trails that are typically used are closed, it may become non-profitable for an outfitter to travel further in the park to reach alternate sites. However, if a trail was closed there are generally other trails in the area for the outfitter to use. The overall effect of Alternative C would be short- and long-term, minor beneficial and negligible adverse.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term beneficial impacts to socioeconomic resources.

3.9 Visitor Use and Experience

Affected Environment

Recreational visitation to Yellowstone National Park has increased in the last 15 years, from 2,889,513 in 1997 to 3,447,729 in 2012 (NPS, 2012c). The summer months (June, July, and August) are the primary visitation season in Yellowstone, although the spring and fall have grown in popularity. Approximately 64 percent of visitation occurs in the peak seasons during these three months. During the peak season, facilities such as campgrounds, lodges, visitor centers, restaurants, service stations, and shops are used at or beyond capacity.

More than 75 percent of visitor use within the park is concentrated in the major developed areas. The primary recreational activities that visitors participate in include viewing wildlife, photography, walking, and exploring visitor centers. Other activities include fishing, camping, hiking, horseback riding, and boating.

Yellowstone National Park, in its Long-Range Interpretive Plan (NPS 2000), established a number of visitor experience goals that the Park would like to be available to visitors. These, in part, include:

- To experience the essence of the park's wild nature;
- To behave in ways that do not hurt themselves or park resources;
- To successfully plan their visits and orient themselves to facilities, attractions, features and experiences;
- To experience programs, media, and facilities that enhance their educational experiences;
- To understand the park's significance; and
- To enjoy themselves, have memorable experiences, and leave feeling enriched.

In 2012, commercial stock outfitters provided trips for 4,640 visitors into the backcountry of YNP, while Xanterra provided stock rides for 16,822 visitors.

The NPS is committed to providing appropriate, high-quality opportunities for visitors and employees to enjoy the parks in a safe and healthful environment. Further, the NPS strives to protect human life and provide for injury-free visits. Employee and volunteer safety within the workplace for the park and concessioners is a high priority. Injuries while riding stock do occur in YNP, a majority occurring from falling off stock. Commercial saddle and pack outfitters must have one guide on each trip certified in first aid and CPR as well as carrying a first aid kit.

Methodology and Intensity Level Definitions
Methodology used for assessing impacts to visitor experience is based on how changes in commercial stock use would affect the visitor, particularly visitors' enjoyment of the park's primary resources. Thresholds for this impact assessment are as follows:

Impact Intensity	Impact Description
Negligible	Management actions would result in impacts that would be barely detectable, or would occasionally affect the experience of few visitors in the applicable setting.
Minor	Management actions would result in impacts that would be slight but detectable; could be perceived as negative by visitors or would inhibit visitor experience. Impacts would negatively affect the experience of some visitors in the applicable setting.
Moderate	Management actions would result in impacts that would be readily apparent and perceived as somewhat negative. Impacts would negatively affect the experience of many visitors in the applicable setting.
Major	Management actions would result in impacts that would be highly negative, affecting the experience of a majority of visitors in the applicable setting.

3.9.1 Impacts of Alternative A (No Action)

Under Alternative A, commercial stock outfitters would no longer be able to provide visitors an overnight camping or day ride trip into the backcountry of YNP. Commercial stock outfitters provide a service many visitors use while visiting the park and one that is often recognized as part of the Yellowstone experience. Without the services of commercial stock outfitters some visitors who are not physically capable of hiking into the backcountry would not have the opportunity to have this backcountry experience. These visitors are more likely to need the services of a saddle and pack outfitter to travel into the backcountry and enjoy the type of recreation these settings offer. People unfamiliar with the

backcountry, or lacking the skill and equipment to use stock would also lose the opportunity for this popular recreation activity. Visitors seeking a more personal, wilderness-oriented stock trip, which differ from Xanterra day rides, would be adversely affected. Further, rides provide educational opportunities for visitors to learn about the park history, geology, and other natural and cultural resources from guides. No longer providing commercial stock outfitter services would have short-term, moderate, adverse impacts to visitors wanting to attain this service.

Continuation of private and administrative day and overnight use would continue. Xanterra would continue to offer day rides from their designated locations. Any adverse impacts from a continuation of these types of use would likely be considered negligible due to the amount of use.

Negligible, long-term, beneficial impacts to other recreational visitor users may occur. At trailheads and along the trails these users would not encounter as much stock waste on the trails, dust generated from stock use, trail conditions may improve, as well as congestion and crowding at some locations, and any potential conflicts between the user groups.

Due to the loss of commercial saddle and pack trips, the overall effect of Alternative A would be minor to moderate, long-term and adverse.

Cumulative Effects: Cumulative impacts on visitor use and experience are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in Yellowstone National Park. Visitation to Yellowstone has generally increased throughout the park's history and peaked at 3.6 million in 2010. The NPS expects the upward trend to continue. The vast majority of visitors stay on or near the roadways of Yellowstone, spending an average of about 1.5 days in Yellowstone. Past activities considered in this analysis include fire management actions, wild fires, human use, aircraft over-flights, and construction projects. Park infrastructure is in continual need of repair/replacement, mainly due to age and use. Past, ongoing, and future construction projects that will have an adverse impact on visitor use and experience include road construction projects (e.g., Norris to Golden Gate, Dunraven to Tower, etc.), building rehabilitation (e.g., Albright Visitor Center, Lake Hotel, etc.), utility replacement/upgrades (e.g., Lake Area Water line, Old Faithful Sewer main, etc.), and general maintenance associated with managing a large park. These actions have caused adverse impacts including increased noise, decreased visibility from smoke, traffic delays from construction, and overall aesthetics. Beneficial impacts have also resulted from these activities, including improved access and quality of experiences throughout the park. In the future, there are no plans that are likely to significantly alter recreational opportunities.

Throughout YNP there are areas of increased risk to health and human safety from on-going park maintenance and construction activities in areas of visitor use. In addition, Yellowstone National Park is a wilderness park with a portion of the mission dedicated to providing enjoyment value to visitors. There are many inherent health and safety challenges for humans that pursue their recreational interests, especially in backcountry locations. Every year geothermal features scald a few people that get too close and contact the extremely hot water. Some wildlife species can bite, gore, and trample people that approach too closely within the comfort zone of individual animals. While these same risks are present for employees, orientation to and familiarity with safety risks generally make employees more aware and cautious about health and safety needs. The cumulative impacts to health and human safety would be minor and adverse.

Therefore, when combined with Alternative A, cumulative impacts to visitor experience would be minor, short- and long-term, adverse and beneficial.

3.9.2 Impacts of Alternative B

Commercial saddle and pack use directly impacts visitor experience, both beneficially and adversely. In 2012, over 4,600 visitors took some type of commercially guided saddle and pack trip (not including Xanterra) in YNP. As evidenced by comments received during the scoping process for this EA, this use is often recognized by visitors as part of a historical tradition in YNP.

Crowding and congestion would continue to affect the quality of some visitor experiences in areas where horse and hiker use is high. Certain trails and trailheads would still be crowded (e.g., Glen Creek, Blacktail, Slough Creek), especially on weekends and holidays from early July to fall. There would be no changes to risks associated with health and safety and commercial stock outfitter use. Commercial stock outfitters would continue to apply the safety requirements that are specified in the Operating Plan. Before each trip they would also continue to discuss safety topics with their clients including rider safety, trail and weather conditions and animal encounters.

Adverse impacts to visitor experience result primarily from stock waste on the trails, dust generated from stock use, trail conditions, congestion and crowding where stock and hikers congregate, and lack of trail etiquette. Waste, both urine and manure, accumulates on trails, and although some actions are taken by concessioners to remove manure from trails, impacts to visitors from stock waste on trails continues to be a concern.

Temporary trail closures would occur as necessary when trails are washed out or are impassable to stock and/or hikers. NPS would make efforts to open trails as quickly as possible to all users.

Overall, implementation of Alternative B would have a minor, long-term beneficial effect to visitor use and experience.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term beneficial and adverse impacts to visitor use and experience.

3.9.3 Impacts of Alternative C (Preferred Alternative)

Alternative C would have similar effects of Alternative B.

Other elements including trail monitoring, use of an adaptive management strategy, trail maintenance and funding, temporary trail closures due to weather and trail conditions, removal of stock waste from the trails, education of trail users, implementation of annual use limits on rides, and continuation of administrative stock use also would affect visitor experience. Under Alternative C, there could be some limitations on day use. Therefore, crowding and congestion could be alleviated in some high use areas. This may also prevent the need for commercial outfitters to park in other pullouts other than the one at the trailhead they are using and having clients ride along or across the road. Additionally, hitching posts may be installed at areas where they are not currently.

Monitoring and any resultant adaptive management actions (i.e., further limiting stock use on trails, either temporarily or permanently) would have beneficial and adverse impacts. The intent of the management actions proposed in this document is to consider and weigh all impacts to trails, natural and cultural resources, visitor experience, and park operations to determine future actions. If further limits were placed on stock use, adverse impacts on visitor opportunity to access the backcountry using stock would occur; however, this would also have beneficial impacts on visitor experience due to better trail conditions and less stock waste on trails.

Closures of trails or limits on use may affect visitor use and experience; however other trails are available in the park. For the reasons stated above and in Alternative B, implementation of Alternative C would have a minor, long-term beneficial effect to visitor use and experience.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to visitor use and experience.

3.10 Park Operations

Affected Environment

Park operations consist of NPS, concessioner, and contractor operations which encompass protection of natural resources; maintaining all roads, trails, buildings and other structures in a safe and aesthetically pleasing condition; preventing deterioration that would render them unsightly, unsafe, or beyond repair and providing dining, shopping, and lodging opportunities to park visitors.

National Park Service Operations

The NPS provides operations and support for administrative services, resource management, cultural and natural resources, visitor facilities, visitor protection, and emergency services throughout the park. NPS employee housing and administrative offices are located at developed areas including Mammoth Hot Springs, Norris, Canyon, Tower, Northeast Entrance, Lake, Grant, Madison, South, Old Faithful, and West Yellowstone. Park-wide operations include maintenance of museums, ranger stations, housing, campgrounds, warming huts, vault toilets, water and sewage systems, housing and other buildings, road maintenance, garbage collection, and maintaining the NPS vehicle fleet (snowmachines, snowcoaches, boats, cars, trucks and heavy equipment).

Resource and visitor protection operations in YNP include the backcountry office, communication center, corral operations, and law enforcement rangers. The backcountry office provides technical support for backcountry activities undertaken by both park visitors and park employees. During 2012, Yellowstone had 40,460 overnight stays at backcountry campsites. The communication center is the central dispatch for all park communications. Corral operations provide support for backcountry trips. Law enforcement rangers regularly patrol frontcountry and backcountry areas and are responsible for visitor and resource protection, emergency services, and structural fire response to the park's developed areas. The park's trail crew in the Resource and Visitor Protection Division maintains all designated trails and routes. On average, the park rehabilitates or reroutes 10-15 trail sections/segments per year. Cost and funding is also considered part of park operations. Trail maintenance in particular is very expensive, and although not the only factor in determining park stock use levels, cost is considered.

Commercial Operations

Xanterra Parks and Resorts operate commercial lodging, gift shops, and dining and camping facilities in the park's developed areas. They also operate year-round bus tours during summer months and offer oversnow vehicle use in the winter. Delaware North operates stores that sell gifts and souvenirs, groceries, camping supplies, Yellowstone fishing licenses, and fishing tackle and equipment, and offer limited food and beverage service. Yellowstone Park Service Stations operates service stations in Mammoth Hot Springs, Canyon, Fishing Bridge, Grant Village, Old Faithful, and Tower that sell fuel, snacks, and refreshments. Most of the stations also offer vehicle towing and maintenance service for park visitors. Medcor. Inc. operates medical clinics at Old Faithful, Mammoth, and Lake that provide care for NPS and concessions employees and visitors. Fourteen businesses also hold concession contracts for

winter and summer tours. Currently, 44 Commercial Stock Outfitters hold concession contracts for guided stock trips in the park.

Methodology and Intensity Level Definitions
Impacts to park operations focuses on (1) employee and visitor health and safety, (2) ability to protect and preserve resources, (3) staff size, whether staffing needs to be increased or decreased, (4) existing and needed facilities, (5) communication (i.e., telephones, radio, computers, etc.), and (6) appropriate utilities (sewer, electric, water). Park staff knowledge was used to evaluate the impacts of each alternative and is based on the current description of park operations presented in the Affected Environment section of this document. For purposes of analyzing potential impacts to park operations, the intensity of an impact is defined as follows:

Impact Intensity	Impact Description
Negligible	Park operations would not be affected or the effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.
Minor	The effect would be detectable, but would be of a magnitude that would not have an appreciable adverse or beneficial effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.
Moderate	The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
Major	The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public, and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, could be expensive, and their success could not be guaranteed.

3.10.1 Impacts of Alternative A (No Action)

Alternative A would have negligible beneficial effects on park operations in YNP. Currently, commercial stock use outfitters impact park operations through management of concession contracts, issuance of backcountry permits, contact between park staff and stock users, and trail maintenance including reroutes. The existing trailheads, trails and backcountry campsites would continue to be used by private stock and other recreational users. Backcountry rangers stationed at various backcountry cabins would remain. Under Alternative A, monitoring for resource impacts would still occur since private stock use and other recreational use would continue although the monitoring would not be as widespread. Increased education and monitoring efforts proposed under *Elements Common to All Action Alternatives* would have negligible, adverse impact on park operations from efforts and costs associated with development of educational materials and research methods.

Cumulative Effects: Cumulative impacts on park operations are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in Yellowstone National Park. A major source of impacts to operations and facilities is the continued use of the park by visitors and staff. Park infrastructure is in continual need of repair/replacement, mainly due to age and use. Past, ongoing, and future construction projects that will have an adverse impact on park staff include road construction projects (e.g., Norris to Golden Gate, Dunraven to Tower, etc.), building rehabilitation (e.g., Albright Visitor Center, Lake Hotel, etc.), utility replacement/upgrades (e.g., Lake Area Water line, Old Faithful Sewer main, etc.), and general maintenance associated with managing a large park. Activities considered in this analysis include park operations by interpretation, maintenance,

administration, visitor protection, and resource management personnel. Impacts to park operations, including all associated needs for employing staff to conduct these actions (i.e., administrative, housing, vehicles, etc.), would continue in the current condition. Typical park operations include fire management actions, e.g., prescribed and wild fires, human use, emergency services, and construction projects. Beneficial impacts have also resulted from these activities, including improved access and quality of housing and other facilities. When added to other past, present, and reasonably foreseeable future actions in the park, Alternative A would have direct, short -term, negligible to minor adverse impacts.

3.10.2 Impacts of Alternative B

Alternative B would continue park operations associated with commercial stock use; including, management of concession contracts, issuance of backcountry permits, contact between park staff and stock users, and trail maintenance including reroutes. The existing trailheads, trails and backcountry campsites would continue to be used by commercial stock outfitters. Park operations would continue as it has in the past. Increased education and monitoring efforts proposed under *Elements Common to All Action Alternatives* would have negligible, adverse impact on park operations from efforts and costs associated with development of educational materials and research methods.

Alternative B would have a negligible, long-term adverse effect on park operations.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term adverse impacts to park operations.

3.10.3 Impacts of Alternative C (Preferred Alternative)

Alternative C would integrate a monitoring-based management program that would allow limits to be placed on areas of high use or impact identified by monitoring. The results of the monitoring could also be used for future backcountry planning. The operating plan would be used to institute changes to commercial stock use as deemed appropriate. If necessary, there is also the potential that monitoring could lead to a contract modification. Incorporating a monitoring-based management program would have long-term beneficial and adverse impacts. The intent of the proposed monitoring program is to consider and weigh all impacts to trails, natural and cultural resources, visitor experience, park operations, etc., to determine future actions. If future actions are determined necessary, effect on park operations would be considered. If further limits were placed on stock use, for example, this would have minor beneficial impacts on park operations by further limiting trails impacts and allowing for a higher degree of trail maintenance. Monitoring of trail conditions and resource impacts would have adverse impacts on park operations because it would require trail and Yellowstone Center for Resource staff to complete assessments. This work is not routine and would require the addition of two temporary employees.

Monitoring and any resultant management actions (i.e., limiting stock use on trails, temporarily or permanently) would have beneficial and adverse impacts. Temporary trail closures that would occur as necessary would also have adverse impacts on park operations from increased cost to reopen trails as quickly as possible.

Increased education efforts proposed under *Elements Common to All Action Alternatives* would have adverse minor long-term impacts on park operations from efforts and costs associated with development of educational materials.

Alternative C would have a negligible, long-term adverse effect on park operations.

Cumulative Effects: The impacts from past, present and reasonably foreseeable projects would be the same as described in the cumulative effects section for Alternative A. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in minor, short- and long-term, beneficial and adverse impacts to park operations.

CHAPTER 4: CONSULTATION AND COORDINATION

4.1 Scoping

Scoping is a process to identify the resources that may be affected by a project proposal, and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. Internal scoping was conducted by an interdisciplinary team of professionals from YNP. Interdisciplinary team members met throughout 2013 to discuss the purpose and need for the project; various alternatives; potential environmental impacts; past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. The team also gathered background information and discussed public outreach for the project. Over the course of the project, team members have conducted individual site visits to view and evaluate trails and trailheads.

Public scoping began on February 28, 2013, with the release of the public scoping newsletter. The scoping newsletter discussed the purpose and need of the EA, addressed the focus of the alternatives, listed the project website, and announced the upcoming public scoping meetings. The park posted the public scoping newsletter on the NPS Planning, Environment, and Public Comment (PEPC) website at http://parkplanning.nps.gov/yell, sent copies of the newsletter to a list of park stakeholders, and issued a news release inviting the public to comment at the scoping meetings.

During the scoping period, five public scoping open houses were held at the following locations:

- Holiday Inn in Bozeman, Montana on March 11, 2013
- The Lexington in Jackson, Wyoming on March 12, 2013
- West Yellowstone Chamber of Commerce in West Yellowstone, Montana on March 13, 2013
- Yellowstone Association in Gardiner, Montana on March 18, 2013
- Park County Library in Cody, Wyoming on March 20, 2013

The meetings offered a variety of methods for the public to provide comments. NPS personnel and contractor staff were present at each display to answer questions from attendees and record attendees' comments. Members of the public were given the opportunity to ask questions following a presentation given by the park. Comment sheets were provided to meeting attendees as an additional method for accepting public comments. Park staff was on hand to answer questions and provide additional information to open house participants. To keep the public involved and informed throughout the planning process, individuals were given the option to receive notification of the availability of the draft EA.

Consultation was conducted with the park's 26 associated tribes at the same time that public scoping was conducted. One tribe inquired as to whether tribes would still be able to conduct trail rides. Once assured that this plan did not cover private stock use no tribal concerns were raised regarding this plan. This plan is also being reviewed by all 26 associated tribes.

4.2 Scoping and Consultation

In accordance with the Endangered Species Act, NPS contacted the U.S. Fish and Wildlife Service with regards to federally listed special status species. Consultation is currently ongoing and will be completed prior to a decision on which alternative to implement.

In accordance with §106 of the National Historic Preservation Act, NPS provided the Idaho, Montana, and Wyoming State Historic Preservation Officers an opportunity to comment on the effects of this project. Consultation with these SHPO's is on-going and they will review this document. The following is a list of tribes, agencies, local government, and organizations that were sent a scoping letter. The names of private individuals have been omitted from this list.

Tribes
Assiniboine and Sioux Tribes, Fort Peck
Blackfeet Tribe
Cheyenne River Sioux Tribe
Coeur d'Alene Tribe
Comanche Tribe of Oklahoma
Confederated Salish and Kootenai Tribes
Confederated Tribes of the Colville Indian Reservation
Confederated Tribes of the Umatilla Indian Reservation
Crow Creek Sioux Tribe
Crow Tribe
Eastern Shoshone Tribe
Flandreau Santee Sioux Tribe
Gros Ventre and Assiniboine Tribes
Kiowa Tribe of Oklahoma
Lower Brule Sioux Tribe
Nez Perce Tribe
Northern Arapaho Tribe
Northern Cheyenne Tribe
Oglala Sioux Tribe
Rosebud Sioux Tribe
Shoshone-Bannock Tribes
Sisselton-Wahpeton Sioux Tribe
Spirit Lake Sioux Tribe
Standing Rock Sioux Tribe
Turtle Mountain Band of Chippewa Indians
Yankton Sioux Tribe

Agencies/Federal
Federal Highway Administration
United States Army Corps of Engineers
United States Department of Agriculture, NRCS
United States Environmental Protection Agency, Region 8
United States Fish and Wildlife Service
United States Forest Service, Beaverhead NF, Bridger-Teton NF, Custer NF, Gallatin NF, Shoshone NF, Targhee NF

Local Government
Chamber of Commerce Billings, MT
Chamber of Commerce Bozeman, MT
Chamber of Commerce Cody, WY
Chamber of Commerce Cooke City, MT
Chamber of Commerce Gardiner, MT
Chamber of Commerce Idaho Falls, ID
Chamber of Commerce Jackson, WY

Chamber of Commerce Lander, WY
Chamber of Commerce Livingston, MT
Chamber of Commerce Pinedale, WY
Chamber of Commerce Red Lodge, MT
Chamber of Commerce Riverton, WY
Chamber of Commerce West Yellowstone, MT
Gallatin County Commissioners, MT
Historic Preservation Board, Teton County, WY
Idaho Department of Parks and Recreation
Idaho Fish and Game Department
Montana Fish, Wildlife and Parks
Montana State Clearinghouse
Park County Commissioners, MT
Park County Commissioners, WY
Park County, MT
State Historic Preservation Officer, ID
State Historic Preservation Officer, MT
State Historic Preservation Officer, WY
State Planning Coordinator, WY
Teton County Commissioners, WY
Town of West Yellowstone, MT
Wyoming Department of Environmental Services
Wyoming Game and Fish
Wyoming Travel Commission

Organizations
Advisory Council on Historic Preservation
Alliance for the Wild Rockies
American Fisheries Society
American Wildlands
Bear Creek Council
Beartooth Alliance
Billings Public Library
Bozeman Public Library
Buffalo Bill Historical Center
Californian's for Western Wilderness
Cheyenne High Plains Audubon Society
Citizens for Teton Valley
Clear Creek Consulting Solutions
Defenders of the Rockies
Defenders of Wildlife
Environmental Science and Research Foundation
Forest Ecosystems Consulting
Fremont County Audubon Society
Great Bear Foundation
Greater Yellowstone Coalition
Idaho Wildlife Federation
Jackson Hole Alliance for Responsible Planning
Livingston Public Library
Montana Audubon Council
Montana State University Libraries

Montana Wildlife Federation
National Parks Conservation Association
National Wildlife Federation
Northern Plains Resource Council
Northern Rockies Conservation Cooperative
Northwestern Energy
PCIA
Public Employees for Environmental Responsibility
Qwest
Sierra Club
Star Valley Development Association
Stone Fly Society
Teton County Public Library
The Nature Conservancy
The Wilderness Society
University of Wyoming Libraries
Upper Missouri Breaks Audubon Society
US West
Utah Audubon Society
West Yellowstone Public Library
Wild Forever
Wilderness Watch
Wyoming Outdoor Council
Wyoming State Library
Wyoming Wildlife Federation
Yellowstone Association
Yellowstone Park Foundation
Yellowstone Research Library

4.3 Environmental Assessment Review

The EA is subject to a 30-day public comment period. To inform the public of the availability of the EA, NPS will publish a news release and distribute a letter to various agencies, tribes, and individuals from the mailing list. The document will be available for review on the PEPC website at http://parkplanning.nps.gov/Stock EA . Copies of the EA will be provided to interested individuals, upon request.

During the 30-day public review period, the public is encouraged to submit their written comments to NPS, as described in the instructions at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed, prior to the release of a decision document. The National Park Service will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the EA, as needed.

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APPENDIX A-CONSULTATION CORRESPONDENCE

United States Department of the Interior

National Park Service
P.O. Box 168
Yellowstone National Park
Wyoming 82190

IN REPLY REFER TO:

L7617(YELL)

SEP 1 9 2013

Mr. Mark Sattelberg
Field Supervisor
Wyoming Field Office
U.S. Fish and Wildlife Service
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82003

Dear Mr. Sattelberg:

Yellowstone National Park is in the process of completing a Commercial Stock Outfitter Concession Contract Environmental Assessment (EA). The proposed action would issue ten-year concession contracts for commercially guided saddle and pack stock use in the park. The purpose and need of the proposed action is to allow for and provide opportunities for visitors to experience the backcountry of Yellowstone National Park while utilizing guided saddle and pack stock tours and protecting the natural and cultural resources of the park. The project area is located within Yellowstone National Park in Wyoming, Montana, and Idaho. The preferred alternative would issue 44 ten-year concession contracts to commercial saddle and pack stock outfitter-guides, with increased monitoring and management flexibility to respond to resources impacts.

This letter is to request formal consultation on the Commercial Stock Outfitter Concession Contract EA. Enclosed are the biological assessment and EA. Because of these reports and analyses and ongoing informal consultation with Ann Belleman, the National Park Service has determined the proposed project will have effects to the following Threatened and Endangered Species:

Species	**Determination of Effect**
Canada lynx	No effect
Grizzly bear	May effect, likely to adversely affect

Yellowstone National Park requests your concurrence on our determination of effects to the Canada lynx and grizzly bear.

The EA will be available online for public comment for 30 days starting in October at http://parkplanning.nps.gov/projectHome.cfm?projectID=46159 and will be forwarded to Ann Belleman once available. Please direct questions to Dan Stahler, Threatened and Endangered Species Coordinator, at (307) 344-2719, or via email at dan_stahler@nps.gov.

Sincerely,

Daniel N. Wenk
Superintendent

Enclosure

Biological Assessment

Commercial Stock Outfitter Concession Contract

Environmental Assessment

Yellowstone National Park

September 16, 2013

1.0 INTRODUCTION

The purpose of this Biological Assessment (BA) is to address the potential effects of the Commercial Stock Use Plan on species and their critical habitat listed as endangered or threatened under the Endangered Species Act (ESA).

The proposed action identified in this BA and in the corresponding Commercial Stock Use Plan/Environmental Assessment (CSUP/EA) involves the backcountry (non-developed areas) as well as trailhead areas within Yellowstone National Park. The proposed action has the potential to impact the grizzly bear (*Ursus arctos horribilis*), but will have no effect on Canada lynx (*Lynx canadensis*) and its designated critical habitat.

Consultation History

Backcountry Management Plan/EA 1996 (draft, never signed)

Consultation with the USFWS for this plan took place from February 1994 to April 1996. The USFWS had several concerns regarding the potential impact to grizzly bears and the lack of dispersed camping data and limits. The Park responded and a decision was reached to allow a maximum of 140 permits or 3,920 person-use nights annually for dispersed camping throughout the Park. The USFWS issued a biological opinion that the proposed action is not likely to jeopardize the continued existence of the grizzly bear. Additionally, the USFWS stated that the anticipated level of incidental take for the proposed Plan was unquantifiable, but the level of conflict/confrontation was an indicator of the level of take, lethal and non-lethal. The USFWS set the number of conflict/confrontations allowed at 9.4 per year, which was calculated from the past year averages.

Programmatic Biological Assessment: Yellowstone Park Road Reconstruction and Maintenance, 2008-2028, Consultation Completed September 2010

This Biological Assessment (BA) and subsequent BO addressed potential impacts to Canada lynx, Grizzly bears, and Gray wolves resulting from park wide road construction and maintenance. Since Grizzly bears were delisted when the original BA and BO were completed, a second BA and BO were completed. The first BO resulted in a determination that the "effects of the proposed Project on gray wolves are not likely to jeopardize the continued existence of this species" and a "not likely to adversely affect" determination for the Canada lynx. Incidental take associated with the project was anticipated for up to 40 wolves over a 20 year period. The second BO focused solely on the grizzly bear and resulted in a "not likely to jeopardize the continued existence of the grizzly bear." This second BO allowed for a park wide take of "no more than 6 grizzly bears (adult or juvenile) within any consecutive 3-year period, or 36 grizzly bears total, will be taken during the remaining 18 years of the 20-year proposed Project as a result of vehicle mortality…"

Lake Comprehensive Plan/EA, May 2011

This EA implements a comprehensive plan for the lake developed area, incorporating and replacing past planning documents. The plan proposed actions to improve visitor and employee facilities in the lake area. Formal consultation was concluded on January 13, 2011 with concurrence on a not likely to jeopardize the continued existence of the gray wolf or grizzly bear determination. The BO allowed for an incidental take of no more than 4 gray wolves and 4 grizzly bears in the 20-year period of the plan.

2.0 DESCRIPTION OF THE ACTION AND ACTION AREA

The purpose and need of the proposed action is to allow for and provide opportunities for visitors to experience the backcountry of Yellowstone National Park while utilizing guided saddle and pack stock

tours and protecting the natural and cultural resources of the park. The proposed action should meet the following objectives:

1. To continue to provide an opportunity for a unique visitor experience, particularly for those visitors who could not experience the backcountry otherwise.
2. Maintain appropriate levels of commercial saddle and pack stock use in the park that would not result in an increase in degradation of resources.
3. Compliance with concessions law, NEPA, Management Policies, and all appropriate rules and regulations.
4. Maintain the level of commercial stock use in the recommended wilderness at the minimum necessary for public education and visitor enjoyment.

The proposed action would occur mainly in the backcountry, but does include trailheads throughout the park as well.

The proposed action would renew the stock outfitter concession contracts for a term not to exceed 10 years and was developed to address changing conditions, data gaps, and the park's need to manage under changing conditions. This action would continue commercial saddle and pack use with the addition of an intensive monitoring-based management program. Trails and facilities would be monitored to assess conditions and impacts to resources. A monitoring-based management strategy would allow park managers to implement additional management options, as needed, if trails cannot be adequately maintained in the future. For example, park managers could choose to further limit stock use (number per day or year) or close trails to stock use permanently or seasonally.

Past Commercial Stock Use

Year	Stock Use Nights	Day Rides
1994	136	472
1995	129	480
1996	133	478
1997	126	472
1998	135	461
1999	131	401
2000	130	388
2001	128	466
2002	117	566
2003	129	444
2004	115	538
2005	109	673
2006	109	690
2007	132	544
2008	120	515
2009	118	544
2010	134	516
2011	121	641
2012	109	619

The proposed action could include installation of hitching posts where needed, education & outreach, and a monitoring-based management program that would allow limits to be placed on areas of high use or impact identified by monitoring. The results of the monitoring could also be used for future backcountry planning. The operating plan would be used to institute changes to commercial stock use as deemed appropriate. If necessary, there is also the potential that monitoring could lead to a contract modification.

The operating plan includes specific operating responsibilities of the concessioner and the park and is included as a part of the proposed action.

In addition to increased monitoring, this alternative includes:

- Hiker trail counts-There is a lack of data regarding hiker trail use park wide. This data would help park managers analyze impacts and develop solutions for mitigating those impacts.
- Private day stock use counts-Currently private day stock use is not counted and the exact amount of use is unknown.
- Reservation requirement for day trips in heavily used areas based on resource impacts and parking availability
- Designated stock trailer parking and vehicle parking at heavily used areas
- Closures of trailheads, trails, and/or campsites if the impacts are too great
- Establish limits to the number of stock use days in heavily used areas
- Provide information to visitors on horse use in the park by signing trails as "Heavy Horse Traffic" and by ensuring a "stock-free" list of trails is available to visitors at visitor centers.

Resource Monitoring

Potential impacts to park natural and cultural resources typically occur at designated backcountry campsites, pack and saddle stock use areas, along established trails, social trails, along streams and waterways, and around trailheads and parking areas. Currently, backcountry rangers assess impacts to park resources as part of outfitter evaluations and as part of their backcountry patrol duties. While there has been some resource monitoring practices established in Yellowstone, there has not been clearly defined resource monitoring protocols developed for systematic evaluation and adaptive management of park backcountry use. If the no action alternative was chosen resource monitoring would still be implemented, however commercial stock-related monitoring would not occur.

Resource Monitoring would be established to evaluate the following natural and cultural resources associated with park backcountry commercial use:

- **Vegetation** – The more habitual impacts to backcountry use occurs to vegetation and soil resources. Moreover, past resource monitoring has been focused primarily on vegetation monitoring. Key to vegetation monitoring would be to continue these established monitoring methods including:
    1. Campsite Inventories – these were first developed in 1992 and were redesigned in 2007. Methods included a visit to all designated backcountry campsites and measurements of area of bare ground and trampled vegetation associated with the core campsite. Damage to trees and nonnative invasive vegetation were recorded. These assessments would determine visitor use levels in the backcountry, and to establish criteria for "no net loss" management of backcountry and wilderness values. These assessments should be conducted on a 5-10 year cycle to identify localized long-term impacts and issues, and adjust as needed management of campsite use.
    2. Grazing Analysis – campsites that allowed stock have been evaluated using an established, 'grazed loop' method to determine the amount of forage utilized by stocked retained near campsites. This method was developed by U.S. Forest Service for permitted grazing allotments. If grazing utilization occurred greater that 35-50%, then vegetation species composition would likely change and adjustments to stock use would need to be adjusted to maintain impacts below these thresholds.
    3. Social Trails – As part of systematic resource surveys, development of social trails would be surveyed and photo points and condition assessments be established. The commercial use reporting to park concessions office will be critical to inform the park of off-trail use so that

staff can respond and monitor off-trail use and potential impacts associated with high volume use and development of social trails.

- **Water Quality** – Backcountry campsite and trailhead inventories would evaluate water quality impacts from campsite latrine use and stock waste. This would include visual inspection of campsites and stock grazing areas and water sample analysis if determined necessary.

- **Geothermal Resources** – The primary concern of backcountry use in the geothermal areas is illegal off trail travel and vandalism to geothermal resources. Known geothermal and hydrothermal areas would be evaluated using photo-points to determine occurrence and extent of off-trail travel and damage to these resources

- **Wildlife** – The primary concern with park wildlife and backcountry use is food and garbage storage and sanitation of areas after use. Problems associated with improper storage could lead to increased food conditioning of bears and other wildlife. Monitoring would emphasize food storage and assure food storage such as food poles and bear boxes are in place and in good condition. In addition, high levels of human use could lead to habituation of bears and wildlife to people. In areas where food sanitation is compromised, or bear and other wildlife habituation occurs, recreation use would be addressed and changed if necessary. Additional concerns relate specifically to stock use during occasional backcountry stock mortality events (e.g. horses, mules, lamas). These events can result in carcass presence that typically attracts predators and scavengers and results in increased human safety risks and food conditioning to areas adjacent to trails and designated camp sites. Such cases require temporary closures and suspension of recreational activities until either the carcass is removed or fully utilized.

- **Archeology** – Archeological resources can be affected by backcountry use, mostly on and off-trails and in campsites, from erosion, trampling, compaction and illegal artifact take. Monitoring would build from established archeological assessment protocols and would evaluate known archeological resources potentially impacted by recreational use.

Park Asset Assessment

The park maintains a myriad of assets in order to offer visitors the adequate facilities as part of their experience. These include maintenance of park backcountry trails, campsites, trailheads and parking areas. Backcountry assets such trails and campsites are designed and maintained to help absorb impacts to natural and cultural resources, but can deteriorate with increase use. The park would continue with established asset assessments associated with backcountry use. With more accurate records of where and how commercial use will occur, park staff would emphasize these assessments to recognize failing structures such as trail bridges and erosion control structures, trailhead parking areas with associated features such as bumper logs, striping, etc. Information from these asset assessments would be used to prioritize park maintenance activities and/or adjust recreational use patterns.

3.0 LISTED SPECIES AND CRITICAL HABITAT IN THE ACTION AREA

Below is a list of species identified by the USFWS which may occur in Yellowstone National Park, Wyoming. Species that do not occur in the project area are not further analyzed for effects.

Species or Critical Habitat	ESA Status	Status in Project Area
Canada Lynx (*Lynx canadensis*)	Threatened	Known
Critical Habitat for Canada Lynx	Designated	Present
Grizzly Bear (*Ursus arctos horribilis*)	Threatened	Known
Wolverine (*Gulo gulo luscus*)	Proposed as Threatened	Known
Yellow-billed Cuckoo (*Coccyzus americanus*)	Candidate	Not suspected
Whitebark Pine *(Pinus albicaulis)*	Candidate	Known

From October 24, 2011 letter sent to YNP from USFWS Wyoming Field Office.

CANADA LYNX

Canada lynx once ranged throughout the boreal forests of North America from Alaska to Canada and into the northern United States. Below the Canadian border, lynx are listed in 14 states that support boreal forest types and have verified records of lynx occurrence: Colorado, Idaho, Maine, Michigan, Minnesota, Montana, New Hampshire, New York, Oregon, Utah, Vermont, Washington, Wisconsin, and Wyoming (Yellowstone) (USFWS 2005). Based on declining populations and continuing threats from logging, recreation and development to their remaining habitat, Canada lynx were listed as threatened in the lower 48 states in March 2000 (USFWS 2005).

Lynx habitat is described as boreal forests that have cold winters with deep snow and that provide a snowshoe hare prey base (USDI 2003). Primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir and Engelmann spruce. Secondary vegetation, that when interspersed within subalpine forests may also contribute to lynx habitat, includes cool, moist Douglas fir and aspen forests. Lynx need mature forest with a dense understory cover from large woody debris and saplings for denning (Claar et al. 1999). Mature conifer forest with thick deadfall provides denning sites, security, and thermal cover for kittens. Early successional forests are required for hunting (Koehler and Brittell 1990) although denning habitat with dead and down material and structural layers composed of seedlings and saplings also provide foraging habitat. In general, habitats that favor snowshoe hare will provide optimal foraging habitat.

Lynx are a prey specialist, largely dependent on snowshoe hares, and usually occur in the habitats where snowshoe hares are most abundant (Claar et al. 1999). Lynx are specially adapted to survival in deep soft snow regions, such as the higher elevations in the northern Rocky Mountains. Physical adaptations to deep snow give lynx a competitive advantage over other predators, including the coyote, bobcat, and mountain lion. Outside of deep snow areas, these generalist predators are believed to exclude lynx through effective competition for food resources.

Evidence of lynx in Yellowstone National Park comes from about 216 winter tracking surveys (conducted during winters of 2001-2004 and covering 1,043 total miles); from 118 lynx hair-snare transects deployed park wide during the summers of 2001-2004, and from historic sightings. This survey found DNA and track evidence for three lynx, a female and two kittens, all east of Yellowstone Lake (Murphy et al. 2005;

Murphy et al. 2006). This area also contained the highest indices of abundance for snowshoe hare and red squirrel, which form a large percentage of lynx diets (Koehler and Aubry 1994; Sunquist and Sunquist 2002). The authors note that lynx in other areas of the park could have escaped detection, but state that based on their data, they believe that lynx are primarily found in the east sector of the park. Lynx are also occasionally sighted in other areas of the park. Lynx were spotted at Indian Creek (just south of Mammoth) and in the Beryl Springs area (between Norris and Madison). Park wide, only four lynx sightings have been reported by visitors in the last 10 years. Population numbers are unknown. Lynx prefer upper elevation coniferous forests in cool, moist vegetation types, particularly those that support abundant snowshoe hares, the primary food source for lynx. As stated above, the best evidence of lynx presence is along the east shore of Yellowstone Lake. Critical habitat for lynx has also been designated for YNP and overlaps with Lynx Analyses Units through the park created in 2009.

Data on lynx-human encounters suggest that lynx are generally tolerant of continued human presence, human scent, disturbance, and agricultural or housing development (Brand and Keith 1979; Fortin and Huot 1995; Staples 1995; Aubry et al. 1999). Apps (1999) reports that lynx in the southern parts of their range, including the lower 48 states, are generally more sensitive to road fragmentation of habitat due to the relative scarcity of ideal habitat and reduced prey availability compared to that available to lynx in the boreal forests of Canada and Alaska. Observations in Washington found that logging and U.S. Forest Service roads that were little used in the summer but frequently used by snowmobiles in the winter and roads less than 15 meters wide did not appear to affect lynx movements or habitat use (Koehler and Brittel 1990; McKelvey et al. 1999). While these little-used roads do not appear to affect lynx, research in the southern Canadian Rockies indicates that wider, more heavily used paved roads may influence lynx spatial organization, and lynx appear to avoid crossing highways (Apps 1999). Thus, lynx movements in the lower 48 states may be restricted by roads and highways due to direct avoidance of roads and habitat alteration and fragmentation. Ruediger (1996 unpublished report) found that traffic volumes were also a factor and volumes must generally exceed 2,000 to 3,000 vehicles a day in order for lynx to be affected.

The amount of habitat that could possibly be disturbed by commercial stock use on trails and backcountry campsites is negligible and therefore has no effect. These campsites and trails have been in existence for decades and are mostly in open meadows or areas where the habitat modification occurred years ago. Beyond annual trail maintenance, no habitat modifications in the backcountry are being proposed.

Commercial saddle and pack tours operate from May to October, almost exclusively on formal trails in YNP. Winter recreational activities have the most effect on lynx habitat (USFWS 2009). As stated in the 2009 Environmental Assessment for designation of lynx critical habitat, "Recreational facilities designed for summer use have very little effect on lynx (Ruediger et al. 2000a, p. 2-9)". Based on the limited detection of lynx during formal and informal surveys (Murphy et al. 2006), limited sightings of lynx by park visitors and employee's throughout the history of the park (YNP unpublished data), habitat limitations (most of the central and southwestern portions of the park being depauperate of snowshoe hare the lynx's primary prey) (Murphy et al. 2006), and the fact that the proposed action is a continuation of an action that has occurred for over 100 years, the NPS has determined that the proposed action will have "**no effect"** on Canada lynx.

Lynx Critical Habitat

The Fish and Wildlife Service designated critical habitat for lynx on February 27, 2009. Five lynx critical habitat units were selected in the United States that provide adequate habitat elements for lynx. Unit #5 falls within the Greater Yellowstone Area (GYA) and is slightly over 6 million acres. Approximately 927,000 acres fall within Yellowstone National Park.

Adverse modification of critical habitat is defined as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." Therefore, an analysis for adverse modification must be applied at a survival and recovery scale.

As mentioned above, no habitat modification will occur in Yellowstone's backcountry. The proposed action will not impact a measurable amount of the critical habitat in Unit #5, nor affect the function of the critical habitat unit and the Primary Constituent Elements (i.e., snowshoe hare and denning habitats, and matrix conditions). Therefore, we expect that the proposed project activities will have **"No Effect"** on Designated Critical Habitat for the Canada Lynx.

GRIZZLY BEAR

Grizzly bears are currently listed as a Threatened Species in the United States south of Canada. Grizzly bears require large areas to fulfill all their basic biological needs, including food and shelter. Their home ranges average 130 to 1,300 square kilometers (50 to 500 square miles). Within these home ranges the grizzly bear uses a diverse mixture of forests, moist meadows, grasslands, and riparian habitats to complete its life cycle. Grizzly bears generally prefer large, remote areas of habitat for feeding, denning, and reproduction that are isolated from human development (USFWS 1993). They require dense forest cover for hiding and security. In the Yellowstone ecosystem, lodgepole pine *(Pinus contorta)* forests are a large and dynamic part of grizzly bear habitat. Long distance travel habits of some grizzly bears increase the risk of contact with highway crossings, hunters, recreationists, and a variety of other human congregations.

The grizzly bear is an opportunistic omnivore that uses a wide variety of plant and animal food sources. Grizzly bears in the Greater Yellowstone Area (GYA) have the highest percentage of meat consumption in their diet of any inland grizzly bear population (Hilderbrand *et al.* 1999). About 30 to 70 percent of the grizzly bear diet in the GYA is from some form of animal matter. Meat in the grizzly bear's diet varies by season and available forage. Ungulates are an especially important food source for bears in the spring and fall (Knight *et al.* 1984) and use of these carcasses in the Park is well documented (Podruzny and Gunther 2001).

Grizzly bears also eat small mammals such as voles and pocket gophers, however, these mammals form a relatively minor portion of the bear's diet. Spawning cutthroat trout in streams surrounding Yellowstone Lake have been documented in the past as an important food source for grizzly bears (Mattson and Reinhart 1995). Non-native lake trout (*Salvelinus namaycush*) and whirling disease caused by an exotic parasite (*Myxobolus cerebralis*) have significantly reduced the native cutthroat trout population and associated bear fishing activity (Koel et al 2005a, 2006). Drought may also be contributing to the decline of the Yellowstone Lake cutthroat trout population (Koel et al 2005b). Army cutworm moths are also an important food source for bears in the GYA (Mattson *et al.* 1991). Army cutworm moths congregate in remote, high altitude alpine talus areas and feed on alpine flowers. These moths provide important dietary fat in the fall, when grizzly bears are preparing for hibernation, and are also positively correlated with bear reproductive success (Bjornlie and Haroldson 2001). During times of great moth abundance, White *et al.* (1999, as cited in Robison *et al.* 2006) estimated a grizzly bear may eat up to 40,000 moths per day and more than one million per month, representing 47 percent of its annual caloric budget. The uneaten moths then migrate back to lower elevations to deposit their eggs, leaving the alpine areas between August and October. Army cutworm moth congregation sites are in remote areas and therefore, potentially reduce human-bear conflicts by isolating the bears. Grizzly bears will also eat ants (Mattson 2001) and earthworms (Mattson *et al. 2002).*

The grizzly bear also makes use of a variety of vegetative food sources. Whitebark pine seeds are an important fall source of food for grizzly bears in the YGBE (Mattson and Reinhart 1997). Bears consume

whitebark pine seeds contained in red squirrel cone caches (Mattson and Reinhart 1997). Studies show that in years when the whitebark pine seed crop is low, there is an increase in human-bear conflicts (Haroldson *et al.* 2003). This is likely due to bears seeking alternative food sources, such as exotic clover species (Reinhart *et al.* 2001) and yampa *(Perideridia gairdneri),* that occur at lower elevations and closer to humans. In addition to supplying a food source high in fat, whitebark pine seed crops also serve grizzly bears by keeping them occupied at high elevations far from intense human use. Other grizzly bear seasonal foliage use includes roots (Mattson 1997), graminoids, horsetail, forbs, and fruits (whortleberry and huckleberry) (Knight *et al.* 1984, Mattson *et al.* 1991). Bears also eat mushrooms, especially during years when whitebark pine cone production is poor (Fortin 2011).

Status and Distribution

Yellowstone National Park has been delineated as the action area. In accordance with 50 CFR 402.2, the action area includes the planning boundary and all grizzly bear occupied habitat where grizzly bear home ranges may partially or wholly overlap. All direct and indirect effects from the proposed action would occur within this action area.

Historically, the grizzly bear ranged from the Great Plains to the Pacific Coast and from the northern United States border with Canada to the southern border with Mexico. Currently in the contiguous United States, the grizzly population has been reduced to roughly 2% of its former range. It presently only occupies portions of British Columbia and Alberta, Canada and portions of Montana, Idaho, Wyoming, Washington, and Alaska.

The grizzly bear was listed as threatened in the lower 48 states in 1975 [70 Federal Register (FR) 69858] due to concerns about the bear's population status throughout its remaining range. The Yellowstone area population had been reduced to 229-312 bears due to low adult female survival (Knight and Eberhardt 1985). The first grizzly bear recovery plan in 1982 identified five ecosystems thought to support the species within the conterminous United States. They include the Greater Yellowstone Area (GYA), the Northern Continental Divide Ecosystem in north-central Montana, the North Cascades area of north-central Washington, the Selkirk Mountains of northern Idaho, northeast Washington and southeast British Columbia, and the Cabinet-Yaak area of northwest Montana and northern Idaho. The Yellowstone grizzly bear population is discrete from other grizzly populations, has markedly different genetic characteristics, and exists in a unique ecological setting where bears use terrestrial mammals as their primary source of nutrition (Mattson 1997, 70 FR 69865).

The USFWS proposed to establish a Distinct Population Segment of the grizzly bear for the GYA and surrounding lands, and concurrently delist it from the ESA on November 17, 2005 (70 FR 69854). As part of this proposal, grizzly bear habitat security in the Primary Conservation Area is primarily achieved by managing motorized access which: (1) minimizes human interaction and reduces potential grizzly bear mortality risk, (2) minimizes displacement from important habitat, (3) minimizes habituation to humans, and (4) provides habitat where energetic requirements can be met with limited disturbance from humans (70 FR 69867). To prevent habitat fragmentation and degradation, the number and levels of secure habitat, road densities, developed sites, and livestock allotments will not be allowed to deviate from 1998 baseline measures (70 FR 69882).

The final rule to delist the grizzly bear was published on March 28, 2007, and became effective April 30, 2007. Prior to this final rule, the USFWS: (1) finalized the 2003 Conservation Strategy (Interagency Conservation Strategy Team 2007) that guides post-delisting monitoring and management of grizzly bears in the GYA, (2) appended the habitat-based recovery criteria to the 1993 Recovery Plan and the Strategy, and (3) appended the 1993 Recovery Plan and the Strategy with an updated and improved methodology

for calculating total population size, known to unknown mortality ratios, and sustainable mortality limits for the Yellowstone grizzly bear population.

An order was issued by the Federal District Court in Missoula on September 21, 2009, which enjoined and vacated the delisting of the GYA grizzly population. In compliance with this order, the Yellowstone grizzly population is again treated as a threatened population under the ESA.

The range of the grizzly bears in GYA has increased dramatically, as evidenced by the greater than 50% increase in occupied habitat since the 1970s (Pyare et al. 2004, Schwartz et al. 2002, USFWS 2005, Byornlie et al in press). The most recent estimate of the known area occupied by grizzly bears in the GYA is approximately50,280 km^2 (19,413 mi^2), an increase of 15,864 km^2 from 34,416 km^2 reported in the year 2000. The increase in distribution likely reflects bears continuing to expand into suitable but unoccupied habitats on the edge of their current distribution and increased sampling. Because of the methods used to determine known area occupied however, occupancy beyond this perimeter cannot be ruled out.

As an alternative monitoring index to population abundance, other population parameters have been used to estimate population size (Knight and Eberhardt 1987). In 1996, Eberhardt and Knight used several different estimates of population parameters to determine a minimum total population size in the GYA of 245 grizzly bears, an estimated population size of 390 grizzly bears using marked females, and an estimated population size of 344 grizzly bears using distinct family groups. In 2003, the Interagency Conservation Strategy team identified the minimum population estimate for the GYA grizzly bear population in 2001 as 365 grizzly bears. In 2012, the Interagency Grizzly Bear Study Team estimated the total GYA population at 610 bears (Haroldson and Frey 2013). However, different statistical methods suggest there may be as many as 718 bears in the GYA (Haroldson and Frey 2013). Intensive management has resulted in the GYA population increasing at a rate of 4 to 7 percent per year since the early 1990s.

Schwartz *et al.* (2006) concluded that grizzly bears are probably approaching carrying capacity inside Yellowstone National Park. Their conclusion resulted from the analysis of survivorship of cubs and yearlings, and of independent bears, inside Yellowstone National Park, outside the Park but inside the Primary Conservation Area (PCA), and outside the PCA, as well as the analysis of bear distribution in those three zones of residency.

Human developed sites can impact bears through temporary or permanent habitat loss and displacement, unsecured bear attractants, increased length of time of human presence, and increased human disturbance to surrounding areas. Developed sites refer to sites developed or improved for human use or resource development. Examples include campgrounds, trailheads, lodges, restaurants, visitor centers, and work camps. The primary concerns for grizzly bears related to developed sites are direct mortality from bear/human encounters, food conditioning, and habituation of bears to humans (Mattson et al. 1987). Habituation occurs when grizzly bears encounter humans or developed sites frequently, and without negative consequences, so that the bears no longer avoid humans and areas of human activity (FWS 1993). Habituation does not necessarily involve human-related food sources. Food conditioning occurs when grizzly bears receive human-related sources of food and thereafter seek out humans and human use areas as feeding sites (FWS 1993). Gunther (1994) noted that grizzly bear management in Yellowstone National Park has shifted from problems involving food-conditioned bears to problems involving habituated (but not food-conditioned) bears seeking natural foods near developed sites or along roadsides.

Based on current recreation and human population growth trends, the number of people recreating in grizzly bear habitat is expected to increase (USFS 2006a; Cordell et al. 2008; NPA Data Services 2008, 2009; USFS 2009). The primary concerns associated with recreational activities are the same as those

with developed sites: displacement, direct mortality from bear/human encounters and habituation of bears to humans (Joslin and Youmans 1999; White et al. 1999; USFWS 2002). Snowmobiling is restricted to existing roads used by cars in summer and Off Road Vehicle (ORV) use is not allowed in the action area and therefore has very little potential to negatively impact grizzly bears at the individual or population level.

There were 55 known and probable mortalities in the GYA during 2012; 34 were attributable to human causes. None of the human-caused mortalities occurred inside of Yellowstone National Park. Due to current bear management practices, there have been relatively few human-caused grizzly bear mortalities inside of YNP over the last 33 years (see table) despite both increasing human visitation and an increasing grizzly bear population.

Human-caused grizzly bear mortality (including bears captured and sent to zoos) in Yellowstone National Park, 1980-2011.

Year	Park Development Areas	Road-kill Park-wide	Backcountry Areas Park-wide	Park Total
2012	0	0	0	0
2011	0	1	4	5
2010	1	1	0	2
2009	0	0	0	0
2008	0	0	0	0
2007	0	0	0	1
2006	0	1	0	1
2005	0	0	0	0
2004	1	1	0	2
2003	0	1	0	1
2002	0	2	0	2
2001	0	0	0	0
2000	0	0	0	0
1999	1	0	0	1
1998	0	0	0	0
1997	0	0	0	0
1996	0	1	0	1
1995	0	0	3 (power-line)	3
1994	1	0	0	1
1993	0	0	0	0
1992	0	0	0	0
1991	0	0	0	0
1990	0	1	0	2
1989	0	0	0	0
1988	0	0	0	0
1987	1	0	0	1
1986	1	0	0	2
1985	0	1	0	1
1984	1	0	0	3
1983	1	0	0	1
1982	1	0	1	3
1981	0	0	0	0
1980	1	0	1	2

Yellowstone National Park is committed to keeping human-caused grizzly bear mortality as low as possible. Grizzly bear-human conflicts often lead to human-caused bear mortality. Preventing bears from

obtaining anthropogenic foods is the foundation of the National Park Service's strategy for reducing grizzly bear-human conflicts. This is accomplished through education of Park visitors, including contractors, use of bear-proof food and garbage storage facilities, and strict enforcement of bear-related food and garbage storage regulations. Current management policies and requirements related to grizzly bears include:

- Educating park visitors about the causes of bear-human conflicts and how park visitors can modify their behavior to prevent conflicts from occurring. Educational efforts are made both before and after park visitors arrive in the park.
- All garbage cans and dumpsters are constructed of a bear-proof design.
- Food storage devices are provided in all designated backcountry campsites. Backcountry users not staying in designated backcountry campsites are required to store their food and garbage in a bear-proof manner.
- Regulations that require all anthropogenic foods, garbage, and other attractants to be stored in a bear-proof manner are strictly enforced.
- Regulations prohibiting park visitors from feeding bears are strictly enforced. Developed areas and roadside auto campgrounds are frequently patrolled to ensure compliance with food and garbage storage regulations. All anthropogenic bear attractants left unattended in auto campgrounds are confiscated.
- Seasonal closures around high-use bear areas (i.e., spawning streams, Pelican Valley, etc.)
- Close areas to public use if impacts to resources are evident.
- Bear awareness training provided to employees and contractors
- Maintain and enforce current park speed limits.
- Compliance with 36 C.F.R. 2.10 for camping and food storage
- Removal of wildlife carcasses from roads and roadsides to reduce vehicle strike mortality of bears.
- Park staff enforce regulations and implement existing procedures to make anthropogenic foods unavailable to grizzly bears and black bears within developments, along roads, and in the backcountry to reduce the chances of bears becoming conditioned to human foods and garbage.
- Temporary closures of backcountry trails and campsites when warranted by the presence of concentrated bear activity or large ungulate carcasses that are a known bear attractant.
- Requirement that commercial outfitters use weed free hay and feed so as to prevent the introduction of nan-native vegetation.

The following Conservation Measures designed to reduce the chances of grizzly-human conflicts including property damages, incidents of bears obtaining anthropogenic foods, bear-inflicted human injuries and the bear management hazings, translocations, or removals resulting from these conflicts are implemented to mitigate the impacts of Commercial Stock Operations in Yellowstone National Park:

- Concessioner employees may not possess firearms while on duty. The Superintendent, in his or her sole discretion, may grant exceptions to this prohibition upon consideration of a written request from the Concessioner's general manager with a thorough explanation of the basis of the request.
- Backcountry outfitters and guides providing commercial visitor services in Yellowstone, are not allowed to carry guns while conducting trips into the backcountry. While not allowed to possess firearms as Concessioners, stock outfitters and employees can be permitted to possess a firearm for the purpose of euthanizing stock as authorized in 36 CFR § 2.4(a)(3)(d)(2); pursuant to terms and conditions outlined in the permit to possess a firearm.
- Concessioners are responsible for determining how they will interpret and implement State firearm possession laws in regard to their clients. The Concessioner and/or their legal counsel should consult the applicable law and determine how they will implement it.

- Feeding, touching, teasing, or intentionally disturbing or injuring wildlife is prohibited. Willfully approaching within 100 yards of bears or wolves or within 25 yards of any other wildlife or nesting birds or within any distances that disturbs or displaces wildlife or nesting birds is prohibited. This does not apply to inadvertent or casual encounters with wildlife in areas where there is no reasonable alternative route.
- The Concessioner and/or its employees shall, when appropriate, convey to clients the principles and practices of proper food storage, sanitation, and camp organization designed to minimize encounters between bears and humans.
- Bear observations shall be reported to a park ranger as soon as possible so that park staff can take appropriate action. A telephone report to the Central Backcountry Office (307-344-2160) or the Bear Management Office (307-344-2162) is acceptable.
- Food Storage - At night and/or when not attended, all food, garbage, stock feed, ice chests, other scented articles, cooking utensils and stoves shall be suspended at least 10 feet off the ground and at least 4 feet from tree trunks. "Attended" explicitly means that the Concessioner or an employee is in camp, awake, and in close proximity to the food, garbage, stock feed, cooking utensils, ice chests, and any other scented articles. It is not required to hang cooking utensils and stoves that have been washed/cleaned and sanitized. Use existing food storage poles when available. Currently, bear-resistant containers must also be suspended in the manner described above. Strain all waste water and burn solids if a fire is available. If no fire is available, broadcast strained wastewater away from sleeping areas and streams/lakes and pack out solids with trash. Polluting or contaminating any water source (with soap, waste, food, etc.) is prohibited.
- Where fires are allowed, all unconsumed food and other combustibles may be burned in the established pit. All food stuffs must be completely burned or packed out with trash.
- To reduce the chance of bear-human conflicts near carcasses of stock (horses, mules, lamas) that die near park backcountry trails, campsites, and trailheads the Concessioner must move the carcass at least 1/2 mile from any campsite, trail, or trailhead and 200 yards from any water source. The Concessioner shall notify the Central Backcountry Office and the local backcountry ranger of the location of dead stock as soon as possible. The Concessioner is responsible for paying any costs associated with the removal/disposal. If an animal dies within the park, it is the Concessioner's responsibility to remove the carcass from the park or make arrangements for its proper disposal as soon as possible.

The grizzly bear management program currently being implemented by Yellowstone National Park has been highly effective at minimizing bear-human conflicts and human-caused bear mortality.

4.0 EFFECTS OF THE ACTION

This section analyzes direct, indirect, and cumulative impacts of the proposed action. Direct effects are effects that result directly or immediately from the proposed action on the species. Indirect effects are effects that are caused by, or result from, the proposed action and occur later in time after the proposed action is completed. Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological assessment. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

GRIZZLY BEAR

Direct and Indirect effects—Potential effects to grizzly bears from the proposed action are: (1) in rare circumstances, death from the management removal of bears that become conditioned to human foods, or the remote possibility of defense of life and property kills by commercial outfitters; (2) negligible changes

in the quality of habitat due to soil compaction and introduction of exotic plant species in areas around campsites grazed by stock, (3) negligible changes in food availability due to interspecific competition with stock for grazing resources; (4) short term temporary displacement from habitat; and (5) minor changes in the frequency of human-grizzly encounters.

In accordance with the revised Grizzly Bear Recovery Plan, the percent of secure habitat within the Bear Management Units will not be affected. Direct effects of the proposed action may include human-grizzly conflicts in the backcountry, particularly at campsites. Even with mitigation measures in place there is always the possibility of a human-grizzly encounters and grizzlies obtaining anthropogenic foods at these campsites.

In the past twenty years, there have been very few recorded conflicts between stock outfitters and grizzly bears within YNP. In accordance with their concessions contracts, commercial saddle and pack outfitters must abide by the conservation measures listed above.

As described earlier, grizzly bears are opportunistic feeders and will prey or scavenge on almost any available food. This behavior can place grizzlies in direct conflict with humans. Commercial saddle and pack stock outfitter's have access to 100 designated campsites throughout YNP. These camps involve tents, food, supplies, stock, and are centers for attractants such as human and livestock food which may potentially food condition grizzlies. With implementation of the conservation measures the potential for a grizzly-human conflict is reduced. However, the potential still exists. There is also the potential that a conflict could lead to a grizzly mortality. The intentional killing of a bear in defense of property associated with commercial stock camps and defense of human life during direct human/bear confrontations could occur. Direct mortality could also occur during NPS control of nuisance bears, and is the more likely scenario. Live removal of a grizzly to a zoo or another ecosystem as part of nuisance bear management is also considered a mortality because individual relocated bears are no longer part of the population. Commercial day stock use has much less likelihood for conflict as there is little stockpile of human and livestock foods.

Cumulative Effects—As stated above, this project is entirely within YNP and land outside of the park immediately adjacent to the project is federal National Forest lands. There are no private in holdings within the boundaries of YNP. Therefore, there are no state, tribal, local, or private actions likely to occur within the action area.

Ongoing actions in YNP include the eradication of Lake trout. The reduction in Lake trout will likely result in an increase in the Cutthroat trout population. Any increase in the Cutthroat trout population will benefit the grizzly bear, allowing use of historical spawning streams for foraging.

Park visitation remains one of the major factors affecting the grizzly bear in the action area. In 2010, YNP recorded a record 3.6 million visitors. Average annual recreational visitation has increased each decade from an average of 7,378 visitors/year during the late 1890s to 3,300,000 visitors/year in the 2000s. The decade 2000-2009 was the first in history of the park that visitation did not increase from the previous decade. Average annual backcountry user nights have remained fairly static since the 1970s, ranging from 39,280 to 45,615 user nights. In addition to the potential increase in human-grizzly interactions, vehicle traffic may impact grizzly bears directly (injury or death) or indirectly by altering behavior (displacement and avoidance).

Ongoing administrative activities such as road reconstruction and maintenance, backcountry operations, hazing activities, and facilities maintenance would continue to have adverse effects on grizzly bears. These activities would cause temporary displacement from disturbance; feeding and resting behavior may be interrupted. Most facilities maintenance would take place in developed areas, but impacts could occur

from noise and human presence. Park visitation is expected to increase each year as a result of population growth in nearby communities and elsewhere. Recreational use such as fishing, camping, and hiking would continue park wide and could result in adverse impacts to grizzly bears.

5.0 DETERMINATIONS OF EFFECT

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In conclusion, we have determined that the proposed action may affect, and is likely to adversely affect the grizzly bear. This conclusion is due to the possibility that, despite the mitigation measures implemented: 1) grizzly bears may still become conditioned to human foods and may need to be removed or relocated through park management actions because of concerns for human safety, and 2) on extremely rare occasions, grizzly bears may be shot and killed by commercial outfitters in defense of life or property (stock animals) during an unexpected human-bear confrontation/encounter. Over-night visitor use of the backcountry in Yellowstone National Park is not expected to vary significantly because total overnight use is limited by the number of backcountry campsites. However day use may increase and therefore the potential for grizzly bear-human interactions may continue to increase.

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APPENDIX B-TRAILS CLOSED TO COMMERCIAL STOCK USE

MAMMOTH
Osprey Falls
Wraith Falls
Sheepeater Ski Trail
Beaver Ponds
Upper Terraces
Boiling River
Bunsen Peak Trail
Bunsen Peak Road
Lava Creek

CANYON
Artist Point/Point Sublime
Seven Mile Hole
North/South Rim
Artist Paint Pots
Clear Lake
Washburn Hot Springs

OLD FAITHFUL
Monument Geyser Basin

TOWER/LAMAR
Tower Falls
Trout Lake
Chittenden Road
Lost Lake

GALLATIN/BECHLER
Harlequin Lake
Riverside

SNAKE RIVER
Shoshone Geyser Basin
West Thumb Overlook

LAKE
Storm Point
Avalanche Peak
Elephant Back

PARK-WIDE
All trails through thermal areas

APPENDIX C-ISSUES AND CONCERNS RAISED IN PUBLIC SCOPING

Stock Use Plays a Significant Role in Visitor Enjoyment and Accessibility
Commercial outfitting provides recreational opportunities to many that could not experience the backcountry otherwise.
Many people can only enjoy our wilderness area from the back of a horse or mule.
I am a handicapped person. Without a horse I would not be able to see the wilderness areas. Please do not deprive me of this privilege.
Provides a backcountry service for the only way most people are able to get off the roads in Yellowstone and enjoy the backcountry.
For many visitors, the only way to see past the side of the road is on the back of a horse or mule.
Many visitors are unable to hike the trails due to disabilities, many lack outdoor experience and have concerns for their safety, and many visitors are unwilling to venture out on their own.
Any proposed limits on stock use should be viewed in the context of the Americans with Disabilities Act.
Stock Use in Yellowstone is a Tradition and Part of Park History
Stock trips in to Yellowstone Park are part of a legacy.
Backcountry stock use is an integral part of the culture and history of Yellowstone.
Important to keep the traditional use of stock.
Stock animals have been used in the park since the very beginning.
The history of the "west" is horses and cowboys. Outfitters are a good representation of how the "west" really was. Please keep the traditions going.
Travel by horseback in the backcountry is part of the history of this country.
Opposition to Restrictions or Limits on Day Rides or Backcountry Use
Do not limit the use of stock animals.
Against any limits on day rides or stock use in the backcountry or wilderness areas.
Keep access to the Yellowstone backcountry open to the public. Allow to have unlimited access.
If horses are only 14% of 1% of visitors' they deserve to continue.

Critical to preserve our rights to camp and use the trails for our stock.
If changes or limits are suggested they should be fair and science based with options for input by the users.
Comprehensive Plan for All User Groups
Decisions are better served and analyzed via a comprehensive recreation or similar type plan that addresses the cumulative impact of all such visitor uses.
The public and the environmental review process would be better served were the park to look broadly at all trail-based visitation/activities in a comprehensive recreation management plan.
Are limits being considered for other types of visitors as well? If evaluating potential impacts to resources, need to look at hikers, campers, and motorists also.
Hiker/Stock Conflicts
Conflicts between horses and hikers are minimal and can be overcome by education.
Trail Maintenance
Outfitters would be happy to participate in Park Service trailwork.
If budget constraints are a factor then the users of the system could have a fee added for trail maintenance.
Allow volunteer trail work to clear trails and fix problems.
The Forest Service has had us do trail work for years.
Our horse club does a lot of volunteer work for the Forest Service on trail maintenance, bridge building, packing support, etc. If given the opportunity to lend a hand for work projects as such we would be more than willing to lend a hand.
Horse Manure
It should be a requirement that stock users remove all solid waste produced by stock animals.
Pack groups should be required to put bags on their horses to capture manure so they can dispose of it more appropriately.
Separate horse and hikers for the first mile.
Require clean-up of stock in the parking lot or staging areas.
Horse manure does not spread weeds.
As a backpacker, have been compromised by the excessive horse traffic, particularly the manure left on trails.

APPENDIX D-DRAFT OPERATING PLAN

OPERATING PLAN

FOR

GUIDED SADDLE AND PACK STOCK TOURS

YELLOWSTONE NATIONAL PARK

CONCESSIONER: «Business»
CONTRACT: «Contract»

Winter Address: «Address»
«City», «State» «Zip»
Summer Address: «Address»
«City», «State» «Zip»

Office Phone #: «Telephone»
Fax #: «fax»
E-Mail Address (for commercial website): «Email»

E-Mail Address (for correspondence): _____

Emergency Contact Phone #: _____

Print name: _____

Signature: _____Date: _____

Superintendent: _____Date: _____
Yellowstone National Park

INTRODUCTION

The Concessioner is authorized by a Concession Contract with the National Park Service (herein referred to as the Service) to provide guided saddle and pack stock tours within the boundaries of Yellowstone National Park (herein referred to as the Park).
This Operating Plan (herein referred to as the Plan) will serve as a supplement to the Concession Contract «Contract» (herein referred to as the Contract) between «Business» (herein referred to as the Concessioner) and the Service. The Plan describes specific operating responsibilities of the Concessioner and the Service. The Plan will not alter the rights and liabilities of the parties to the Contract. In the event of any conflict between this Plan and the Contract, the Contract will prevail. This Plan will remain in effect until amended or superseded.

MANAGEMENT

Concessioner

- The authorized Concessioner is responsible for the overall management of the concession operation.
- The Concessioner will designate a manager responsible for carrying out the policies and directives of the Service, as well as those of the concession operation. This individual will be the primary contact to act as liaison in all concession administrative and operational matters.
- The Concessioner will employ a staff with the expertise to operate all services authorized by this Contract.

National Park Service

- The Superintendent manages park operations and carries out the policies and directives of the Service, including the management of concession contracts. Through the Chief of the Concessions Management Division, rates and services will be approved, overall operations evaluated and contracts administered. The Chief is delegated the authority to make decisions pertaining to the administration of the concession contract and will act as the liaison between the Concessioners and Service staff.

- The Chief Park Ranger has the authority and responsibility for all aspects of visitor protection and backcountry/wilderness management operations within the Park. The Chief Ranger, through his designated representatives, performs evaluations of this operation, provides guide certification training for Concessioner employees, and has line authority from the Superintendent to make operational decisions which pertain to this contract. The Chief Park Ranger serves as a liaison between the Superintendent and Concessioner, reviewing complaints and operating procedures.

- The Concession Review Program: The Chief, Concessions Management Division, will maintain a continuing review of concession operations and management to determine if the Concessioner is complying with all provisions of the contract, to determine if performance is satisfactory, and to ensure public health and safety. Service staff will prepare written reports of periodic, unannounced, field evaluations. These evaluations, along with a review of proper insurance coverage, timely payment of franchise and reservation fees, and submissions of the Annual Financial Report, Statement of Operations, this Operating Plan and any other required documents, will establish the Annual Overall Rating. Failure to operate in a manner satisfactory under these requirements may result in termination of the Contract.

GENERAL PROVISIONS

The Concessioner is authorized to provide seasonal services to park visitors in Yellowstone National Park from early June until early November. Should Service resources be available, operations may commence and end earlier and later dependent upon a district assessment of trail conditions and upon approval of the Service. Specific dates of operation may fluctuate with weather and trail conditions. Operating dates will be approved annually by the Service.

Environmental Audit: The NPS Environmental Audit Program evaluates Concessioners' facilities and operations with respect to environmental compliance, conformance with the Concessioners' Environmental Programs, and Best Management Practices Criteria contained within the current NPS Environmental Audit Program operating guidelines. The Service may conduct periodic environmental audits and evaluations.

The following must be reported as soon as possible to a park ranger or to the Park Communications Center at (307) 344-7381. These should also be reported to the Concessions Management Office within one week (via telephone, e-mail, fax, or hard copy):

- **Fatalities.**
- **Employee or visitor injuries requiring more than minor first aid.**
- **All motor vehicle accidents resulting in property damage, personal injury or death.**
- **All incidents resulting in personal injury or property damage exceeding $300.**
- **All incidents adversely affecting the Park's resources or damage to government property.**
- **Any known or suspected violation of the law.**

DEFINITIONS

The following definitions apply to concession operations required and authorized under this Contract within the boundaries of the Park unless specifically excluded.

For the purposes of this Contract:

- **District Ranger** is the Supervisor of the District or his/her designee (Backcountry Supervisor).

- **Pack animal** shall include horses, mules, burros, and llamas.

- **Certified guide** shall mean any individual who has successfully completed the Yellowstone Guide Certification Training Program and met all the requirements contained in the Yellowstone Guide Certification Training Program.

- **Core camp** is defined as that area within a 100 foot radius of the fire ring or when no fire ring exists, that area within a 100 foot radius of the cooking area.

- **Designated trails** are trails which are Service-maintained for backcountry travel. A map of designated trails is available from the Park's Central Backcountry Office.

ADMINISTRATIVE REQUIREMENTS

Possession of Firearms

- Section 512 of the Credit Card Accountability Responsibility and Disclosure Act of 2009, P.L. 111-24, 123 Stat. 1764-65, allows persons to possess firearms while in units of the National Park and National Wildlife Refuge Systems if they are in compliance with applicable federal and state law. Following are specific requirements for operating in Yellowstone National Park:

- **The concessioner is responsible for determining how they will interpret and implement State firearm possession laws in regard to their clients.** The Concessioner and/or their legal counsel should consult the applicable state attorney general's office with regard to relevant state firearms laws.

- **The Concessioner must provide the Service its written policy** articulating how it will implement this law in regard to its operation for review and approval within sixty (60) days of the execution of the Contract.

- **Concessioner employees may not possess firearms while on duty.** The Superintendent, in his or her sole discretion, may grant exceptions to this prohibition upon consideration of a written request from the Concessioner's general manager with a thorough explanation of the basis of the request. The Superintendent will provide a written response to the Concessioner.

- Stock outfitters and employees can be permitted to possess a firearm for the purpose of euthanizing stock as authorized in 36 CFR § 2.4(a)(3)(d)(2); pursuant to terms and conditions outlined in the permit to possess a firearm. A copy of the permit application is included in the Plan (refer to ***Appendix H)***.

Franchise Fee and Other Park Fees

- The Concessioner is required to pay a franchise fee to the Service for the term of the Contract. The Concessioner shall pay the percentage of annual gross receipts defined as franchise fee designated in their Concession Contract. The concessioner shall make payment to the Service and the payment must be postmarked no later than **January 31**, following the most recent operating season. Payment must be sent to the Chief, Concessions Management Division, National Park Service, P. O. Box 168, Yellowstone National Park, Wyoming 82190. The Concessioner must make checks payable to the National Park Service.

- The Concessioner and its clients are responsible for paying all other applicable park fees including entrance, fishing and backcountry permit fees.

Annual Financial Report

- Annual Financial Report forms will be filled out electronically. The link to the website for the form and filing is: **http://www.concessions.nps.gov/tools_afr.htm** . These forms are to be transmitted no later than **January 31**, following the most recent operating season.

Backcountry Permit Fees

- A **$25** (non-refundable) fee will be charged for each backcountry permit issued. There is no fee for making permit amendments, i.e., changes in the itinerary, campsites, dates, or number of people or stock. No additional fee will be charged for cancellations unless the cancellation is made after the scheduled start date of the trip. An additional $25 will be charged if a Concessioner fails to contact the Central Backcountry Office to cancel a trip/permit prior to the scheduled starting date. Concessioners will be billed for backcountry permit fees at the end of the operating season.

Operating Plan

- A copy of the Operating Plan, signed by the concessioner, should be returned to the Concessions Management Division before the Concessioner's first trip of the season or July 1, whichever date is earlier.

Insurance / Acknowledgement of Risk

- The Concessioner will submit a Certificate of Insurance and endorsement to the Concessions Management Division verifying coverage as outlined in the Contract no later than **five (5) days prior to operating**. The certificate should name the National Park Service as a Certificate Holder or Additional Insured if the insurance company declines a waiver of subrogation.

- The Concessioner ***may*** require clients participating in a guided saddle and/or pack tour and associated activities to sign an **acknowledgement of risk** form. All such forms must be approved in advance by the Concessions Management Division. This form is an **acknowledgement of risk**, not a waiver of liability and, if used, must conform to ***Appendix A***. The use of a waiver of liability is prohibited for the Concessioner's activities in the Park.

Rates

- The Concessioner must submit to the Concessions Management Division, written rate requests at least **45 days prior** to the anticipated implementation date. The Service will process requests for rate changes as expeditiously as possible based on current comparability studies or applicable guidelines. Rate requests must include the following:
    - Types of service
    - Types of equipment
    - Length of tour / Tour itineraries
    - What the rate includes (e.g., meals, guide, entrance fees, equipment, etc.)
    - Additional information allowing the Service to understand the services provided

- The Service will review the rate request to ensure that the rates and charges to the public are reasonable and justified. For the next operating season, the Service will use the competitive market declaration as the rate approval method.

- The Concessioner will provide Federal Government employees on official business (as designated by the Superintendent) reduced rates for guided saddle and pack stock tours. Federal employees will not displace the Concessioner's clients.

- The Concessioner will honor at a minimum, one credit card such as Mastercard, Visa, Discover, or American Express. The Concessioner will accept debit cards at its discretion or at the direction of the Superintendent.

Advertising

- The Superintendent shall approve all promotional material prior to publication, distribution, broadcast, etc. The Concessioner must submit all promotional material prior to publication, distribution, broadcast, etc., to the Concessions Management Division at least **30 days prior** to the proposed use of such material. The Concessioner may not use such information until after the Service has provided written approval of it. All advertisements must include a statement that the Concessioner is authorized by the Service, Department of the Interior, to serve the public in the Park. The Superintendent may require the Concessioner to remove all unapproved promotional material. The Service will use its best efforts to respond to minor changes within 15 days.

Visitor Comments

- The Concessioner will investigate and respond to all visitor complaints regarding its services. Visitor comments that allege misconduct by Concessioner or Service employees, pertain to the safety of visitors or other Park employees, or concern the safety of park resources must be provided to the Service upon receipt.

- The Service will send complaints regarding the Concessioner's services to the Concessioner for investigation and response in a timely manner. The Concessioner will provide a copy of their response to the Concessions Management Division. The Service will forward a copy of its response to the Concessioner.

Lost and Found

- Lost items should be reported to the nearest Service contact station or park ranger. Found items must be turned into the nearest Service contact station or park ranger along with information on where and when they were found as required by Title 36, Code of Federal Regulations (CFR), Section 2.22(a)(3).

Statement of Operations

- The Concessioner is required to submit an annual use report, known as the Statement of Operations (refer to ***Appendix B***). This report will accurately reflect the number of trips into the park, number of clients on each trip, number of stock used, and a breakdown of day trips and overnight trips. The Statement of Operations must be postmarked no later than **December 31, of each operating year**, and submitted to the Central Backcountry Office, National Park Service, P.O. Box 168, Yellowstone National Park, Wyoming 82190.

Pesticide Use

- ***Appendix I,*** the ***Pesticide Use Log – Pesticide Use Proposal*** form should be submitted to the Concessions Management Division, prior to the use of pesticides which

are not already listed on the form, and at the end of the Concessioner's season for **the amount of pesticides used or to report no use**.

Service Monitoring

- The Service will monitor the Concessioner's operations and equipment on an annual basis to ensure public health, safety and satisfactory operations. The Service will also monitor the Concessioner annually on compliance with the requirements of the Concessioner Contract including provisions aimed at protecting resources, obtaining insurance, reporting requirements, and timely fee payments.

- The Concessioner must be responsive to dates assigned by the Service for correction of deficiencies.

First Aid & CPR Requirements

- At least one Service-certified guide on every trip is required to be currently certified in First Aid and CPR. The guide is not required to carry the First Aid and CPR cards on her/his person, if copies of the cards are on file with the Central Backcountry Office.

Contract Compliance

- The Concessioner and its employees will comply with all applicable laws, regulations and terms and conditions of the Contract and this Operating Plan.

- Failure to be ready, willing, and able to provide the services as required in the Concessioner Contract during one operating season may result in termination of the Contract.

- Serious or repeated violations or noncompliance with the terms of the Contract or this Plan may result in termination of the Contract.

OTHER REQUIREMENTS

Resource Protection

- The Concessioner will comply with all Service rules and regulations dealing with resource protection and will ensure that employees and clients are aware of these rules and regulations.

- Any activity which adds stress to Park wildlife will not be tolerated. If activities of the trip cause noticeable disturbance to animals, the lead guide will take mitigating measures to relieve that stress.

Vehicles

- All motorized vehicles and trailers used by the Concessioner within the Park as authorized by the Contract must be licensed in accordance with the regulations of the state in which they are registered. Concessioner vehicles and trailers that will be utilized within the Park will be submitted as a list with the vehicle description (year, make,

model), license number, owner/title holder, and Concessioner. **The Concessioner will submit this list to the Central Backcountry Office 15 days prior to the Concessioner's first trip each year and updated as necessary throughout the term of the Contract** to ensure an accurate and current listing of such. All vehicles and trailers shall be maintained in a safe operating condition according to appropriate federal and state regulations. The Concessioner shall park his/her vehicles in an area approved by the Service and in such a manner as to afford sufficient space for other users.

- The Concessioner and/or any of its employees operating motor vehicles within the park must possess a valid state motor vehicle operator's license, appropriate for the vehicle being operated.

- **All trailers must be cleaned of manure before stock is loaded for a trip into the Park.**

Stock

- The Concessioner is required to comply with federal regulations regarding the transport of stock and may be required to provide proof of testing and necessary immunizations of stock, as required by federal, state, federal, and county agencies. **Before the first trip of the season, the Concessioner is required to submit to the Central Backcountry Office valid proof of a negative Coggins test performed within the last 12 months for each equine entering the Park**. Concessioner stock without proof of a negative Coggins test performed within the last 12 months and submitted to the Central Backcountry Office, are prohibited in the Park.

Staffing and Employment

- The Concessioner will hire a sufficient number of employees to ensure satisfactory services.

- The Concessioner will provide appropriate job training to each employee prior to duty assignments and working with the public. The Concessioner will provide mandatory employee orientation for all new employees and inform all employees of Park regulations and requirements that affect their employment and activities while working in the Park.

- The Concessioner will provide to the Central Backcountry Office, **15 days prior to their first trip of the year** or whenever there is a change in staffing (i.e. new hires, terminations) a list of employees with their full name, and where applicable, the expiration date of **First Aid and CPR certifications**. There is no longer a requirement to include date of birth, SS#, and driver's license # to complete a background check for wants/warrants. The Concessioner will not use, for any of its activities within the Park, any individual currently prohibited from entering Yellowstone National Park by a court order or judicial decision.

- At least one staff member on each trip must have a current Service-issued certified guide card. To receive a current guide card, concessioner employees must complete the Yellowstone Guide Training Program at least once every two years. Certified individuals who lead guided saddle and pack stock tours within the Park must be 18 years of age or older.

- Staffing should be adequate to provide the service advertised, to minimize impacts on the resource, and to provide for the safety and enjoyment of the clients.
    - Minimum number of staff per trip:
    - 1-10 stock = 1 staff
    - 11-20 stock = 2 staff
    - 21-25 stock = 3 staff

- Whenever possible, the Concessioner should limit group sizes to no more than 20 riders (18 clients plus 2 staff).

- All Concessioner employees responsible for handling saddle and/or pack stock within the Park shall be experienced with stock and shall be able to adequately feed, groom, handle and care for all stock and tack used by the Concessioner in the Park.

- The Concessioner and its employees must be neat in appearance and demonstrate a friendly, helpful attitude toward their clients, other visitors and Service employees.

- The Concessioner and its employees must be knowledgeable of park regulations, including those of a specific area, and the purpose for these regulations. It is the responsibility of the Concessioner to ensure that all restrictions, regulations, and hazard warnings associated with the backcountry are conveyed to all employees on the trip. The Concessioner and its employees must abide by all federal, state, and local regulations while operating within the Park. Concessioner employees are responsible for conveying restrictions, regulations, and hazard warnings associated with the backcountry to clients on the trip. In doing so, they should make a concerted effort to impart understanding and ensure enforcement of the regulations.

- In case of emergency, all Concessioner employees on trips within the Park must be familiar with the procedures necessary to access the Park's Communications Center by calling 911, by using a radio, or by contacting a ranger.

- The Concessioner and its employees shall be sufficiently knowledgeable to describe attractions and comment on the resources (natural and cultural) of the area. Information presented should be accurate and appropriate to the audience.

- The individual Concessioner employee responsible for guiding any trip (day or overnight) within the Park must have a basic knowledge of map reading and must have in his/her possession a topographic map of Yellowstone (7 ½ or 15 minute series maps covering the area of intended travel are sufficient). Possession of a compass and knowledge of compass use are recommended for all trips in the Park and required on any off-trail (cross-country) trips. A GPS device should not be considered a substitute for maps and compass, since GPS units are battery operated and can sometimes fail to operate.

- The Concessioner shall not employ, in any capacity, a Yellowstone National Park Service employee, the spouse, or minor children of a Service employee without prior written approval of the Superintendent. All such written requests should be submitted to the Concessions Management Division, P.O. Box 168, Yellowstone National Park, Wyoming 82190.

Interpretive Services

- The Concessioner must provide interpretive skills training for all employees that provide interpretive, informational, and safety orientation information. Employees will be informed of regulations and requirements affecting their employment and activities while working in the Park. The Service may monitor the quality of the Concessioner's interpretive services to ensure appropriateness and accuracy.

- Park staff may be available to advise and assist the Concessioner in the development of interpretive materials and/or methods.

- Concessioner employees should strive to convey their knowledge of Yellowstone National Park's resources and history using appropriate interpretive techniques.

- The Concessioner should strive to provide a wide array of methods for conveying interpretive messages to clients on park-related themes and topics such as resource protection, appreciation of park values, and Service goals.

Trip Itinerary

- To ensure an adequate opportunity for an evaluation of the Concessioner's performance, the Service must have prior knowledge of the outfitter's itinerary in the park, including day trips and overnight trips. Therefore, the Concessioner shall provide the Central Backcountry Office advance notice of **ALL** trips into the Park. Also, the Concessioner must notify the Central Backcountry Office of any changes or cancellations in their backcountry reservations. Failure to notify the Central Backcountry Office of trips, cancellations and itinerary changes, except under emergency conditions, is grounds for a less than satisfactory operational performance rating on the Annual Overall Rating.

Illnesses

- Information on all human illnesses (employees or clients) will be reported immediately to the Concessions Management Division at 307-344-2271. This information will be evaluated by the United States Public Health Service representative to determine whether outbreaks could be associated with contaminated water, food, or other adverse environmental conditions. A suspected outbreak of human illness is two or more persons with common symptoms that could possibly be associated with contaminated water or food sources or other adverse environmental conditions.

FIELD OPERATION REQUIREMENTS

General Requirements: This section generally coincides with the elements listed on the *Periodic Concession Evaluation Report* form (refer to ***Appendix C***).

OPERATIONAL

- A ***Backcountry Use Permit*** (refer to ***Appendix D***) is required for all overnight use outside designated automobile campgrounds.

- Advance Reservations: The Concessioner may make advance reservations for designated stock sites pursuant to the *Backcountry Campsite Reservation Conditions 20XX* (refer to ***Appendix E***). The Concessioner may make advance reservations only if an authorized guide accompanies the party for the entire trip and the Backcountry Use Permit is written in the Concessioner's name. A Backcountry Use Permit is not transferable to another party without prior approval from the Central Backcountry Office.

- If the Concessioner wishes to reserve in advance a non-stock site for a "drop camp" he must leave his/her guide with the party for the entire duration of the permit. If the Concessioner is providing drop camp service only and not leaving an authorized guide, a member of the camping party must obtain the backcountry campsite reservation and/or permit in their name.

- All campsites, including the designated horse-use sites, have established length-of-stay and party size limits. Camping shall be in accordance with limits identified on the Backcountry Use Permit. The Concessioner and its employees are included in the total party size. A campsite list showing campsite locations, party size, stock limitations, and other restrictions is attached (refer to ***Appendix F,*** *Advance Reservation Stock Campsite List – 20XX****)*** or is available from the Central Backcountry Office.

First Aid Kit and Certification

- At least one certified guide on each trip within the Park must be trained in **First Aid and CPR** and possess current **First Aid and CPR** certification**s** (a minimum of standard or multi-media). Guides are not required to carry First Aid and CPR cards with them. The expiration date for **First Aid and CPR** certification**s** for a guide (where applicable) will be provided to the Central Backcountry Office in a list of employees submitted 15 days prior to the Concessioner's first trip of the year, and updated whenever there are changes (see page 8).

- As a minimum, a basic First Aid kit will be carried by each party. The First Aid kit shall include the following or similar items. Deviations from the minimum must be approved by the Service:

Personal Use
Kerlix or gauze roll (minimum of two)
Triangular bandages (2). May not substitute bandannas.
Dressings; 4 X 4, 2 X 2, (3 each)
Band-Aids: assorted sizes and types
2" wide medical tape (2 rolls)
Ace bandages (2)
Aspirin, Ibuprofen or Tylenol (care must be taken with legal ramifications)
Topical disinfectant (Neosporin, betadine, etc.)
Material for splinting and bandaging
Trauma scissors
Tweezers
Micro shield or pocket mask
Rubber, latex or nitrile gloves (3 pairs)
Alcohol wipes
Moleskin or blister kit (if activity involves hiking)

Stock Use
Scarlet oil, blue lotion or equivalents
Nitrofurazone solution dressing or dematur
Sulfa-urea powder
Blood stop powder
Absorbine
Thermometer
Vet wrap

Incident Reporting

Report to a park ranger or the Communications Center (307-344-7381) as soon as possible any of the following:

- **Fatalities**
- **Employee or visitor injuries requiring more than minor first aid.**
- **All motor vehicle accidents resulting in property damage, personal injury or death.**
- **All incidents resulting in personal injury or property damage exceeding $300.**
- **All incidents adversely affecting the Park's resources or damage to government property.**
- **Any known or suspected violation of the law.**
- Observed wildfires.
- Any lost stock not found by the end of the Concessioner's trip.
- Any stray stock not belonging to the Concessioner that is found or sighted.
- Concessioner employees are encouraged to report poor trail conditions.

- Concessioner stock that dies in the park. The carcass must be moved at least 1/2 mile from any campsite and 200 yards from any trail or water source. The Concessioner shall notify the Central Backcountry Office and the local backcountry ranger of the location of dead stock **as soon as possible.** The Concessioner is responsible for paying any costs associated with the removal/disposal. If an animal dies within the park, it is the Concessioner's responsibility to remove the carcass from the park or make arrangements for its proper disposal as soon as possible.

Bears/Wildlife Warnings

- Feeding, touching, teasing, or intentionally disturbing or injuring wildlife is prohibited. Willfully approaching within 100 yards of bears or wolves or within 25 yards of any other wildlife or nesting birds or within any distances that disturbs or displaces wildlife or nesting birds is prohibited. This does not apply to inadvertent or casual encounters with wildlife in areas where there is no reasonable alternative route.

- The Concessioner and/or its employees shall, when appropriate, convey to clients the principles and practices (described on page 14 of this plan) of proper food storage, sanitation, and camp organization designed to minimize encounters between bears and humans.

- Bear observations shall be reported to a park ranger **as soon as possible**. A telephone report to the Central Backcountry Office (307-344-2160) or the Bear Management Office (307-344-2162) is acceptable.

STOCK AND TACK

All horse use will comply with the specific provisions of 36 CFR 2.16 – *Horses and Pack Animals,* most of which have been incorporated into this Plan. Refer to ***Appendix G.***

Care of Tack and Stock

- Saddles, saddlebags, blankets, pads, bridles, and other tack shall be in good condition, clean and well-maintained.

- All stock used for Concessioner operations shall be in good condition, well-trained, and ell-groomed. All riding stock used for clients shall be gentle enough to accommodate inexperienced or novice riders. Any animal that is obviously ill or injured, or is found to have demonstrated unsafe disposition shall not be used in park operations. Stock should be familiar to highlines, pickets, hobbles, and various temporary corrals.

- Loose herding or free trailing pack stock or rider-less saddle stock is prohibited.

- On extended overnight trips, riders may travel off designated trails or routes, except in thermal areas and where such travel is prohibited. Pack strings are not allowed off-trail unless no other access is available or a provision for off-trail travel has been stipulated in the Backcountry Use Permit.

- Groups using the same trail must be spaced a minimum of 15 minutes apart. When two groups pass each other, one group should move off the trail and remain still until the other group has passed. Riders must slow their horses to a walk when approaching and passing persons on foot.

- Riders on day rides are required to use Service-designated trails. Groups, including the guide, will travel in single file on designated trails. Only one person will be allowed on each horse. Off-trail rides will **not** be permitted for routine and repetitive rides using the same area. Off-trail travel is prohibited except under the following circumstances:
  a.) For rides whose primary purpose is fishing, riders are allowed access to the stream/lake. Travel is limited to the most direct route from the designated trail to the fishing location.
  b.) When on an overnight backcountry trip, users may take off-trail day trips from their backcountry campsite.
  c.) With advanced approval from the Central Backcountry Office for occasional, non-repetitive rides.

- One pack animal is allowed for approved off-trail trips.

- Resource damage from off-trail travel such as the creation of new trails is prohibited. Off-trail riders should disperse themselves so as to not create additional trails or routes that others would follow. Groups should not repeatedly use the same routes, traveling nose-to-tail which can rapidly create a new trail.

- Cutting of trees or otherwise maintaining areas for the purpose of travel while not on a designated trail is prohibited.

- Day rides must not travel into or through designated backcountry campsites.

- Permitted commercial use of Park trails with end destinations outside the boundaries of the Park will be recorded and reported as day rides (e.g. packing/hauling materials, supplies, and clients for fishing camps and hunting camps). Such use will be subject to restriction or suspension at the discretion of the appropriate District Ranger, based on trail conditions and resource impacts. In such cases, permitted commercial users will be required to access outside-of-Park camps and/or destinations via other routes, irrespective of weather, distance, or user convenience.

- Concessioner employees will notify the District Ranger about any obstacles, hazards or other problem areas on the trails as soon as possible.

- Trail closures for resources protection, such as wet conditions, bear closures, or fire management, will be transmitted to concessioners with as much notice as possible. During a closure the District Ranger or their representative will monitor the closure and reopen the trails when it is safe to do so.

Trails Closed for Commercial Stock Use

Mammoth	Canyon	Tower / Lamar	Snake River
Osprey Falls	Artist Point / Point Sublime	Tower Fall	Shoshone Geyser Basin
Wraith Falls	Seven Mile Hole	Trout Lake	West Thumb Overlook
Sheepeater Ski Tr	North / South Rim	Chittenden Road	
Beaver Ponds	Artist Paint Pots	Lost Lake	Lake
Upper Terraces	Clear Lake		Storm Point
Boiling River	Washburn Hot Springs	Gallatin / Bechler	Avalanche Peak
Bunsen Peak Tr		Harlequin Lake	Elephant Back
Bunsen Peak Road	Old Faithful	Riverside	
Lava Creek	Monument Geyser Basin		

Park-wide: All trails through thermal areas not included above

Amount of Stock & Loads

- Stock in excess of the number necessary to properly accommodate the trip is prohibited. A sufficient number of stock shall be used to ensure that stock is not overworked or overloaded. Each pack horse or mule should carry at least 100 pounds in addition to its tack at the beginning of the trip. Llamas and burros should carry at least 40 pounds. Unless special permission has been obtained; the maximum allowable number of stock is 25. The District Ranger or their representative may adjust the number of stock and period of use for a specific backcountry site depending on potential or prior resource damage. Stock in excess of the established limits or as declared on the Backcountry Use Permit is prohibited.

Feeding & Grazing

- The use of hay or straw for any purpose **is not** permitted within the backcountry. Processed feed, such as pellets, cubes and/or "weed free" rolled oats may be used. Authorization to graze is temporary and is granted only while the trip is in progress. Site specific grazing instructions may be given by the District Ranger.

Stock Retention

- The Concessioner is expected to utilize minimum impact livestock retention practices to minimize impacts on the resource. The use of hobbles or allowing stock to graze freely minimizes resource impacts and is encouraged. Tying stock in such a manner as to damage any feature, the vegetation, or soil is prohibited. Stock shall not be retained in the core camp. Individual animals may be brought into the core camp temporarily for the purpose of packing or unpacking. Corrals and drift fences are prohibited. The impacts of whatever stock retention method used must be mitigated and the area returned to as natural a condition as possible prior to the party's departure.

- Picketing: If pickets, stakes, or drag logs are used, they must be moved at least twice daily, more often if necessary, to prevent resource impacts such as overgrazing and trampling. Live or standing trees shall not be cut to use as drag logs or picket pins. Picketing to standing trees or shrubs (live or dead) is not permitted. If picketing is anticipated, it is advisable to carry metal picket pins. Stock should be picketed so that animals at the end of the picket line will be no closer than 100 feet to any water source, **campsite** or any Service-maintained trail.

- Electric Fences: Portable electric fences are allowed but should be moved as often as necessary to prevent resource impacts. Electric fences may be connected to live trees or vegetation, but doing so may reduce the effectiveness of the fence due to diminished current.

- Hitching lines: Hitching lines between trees or other anchor points may be used as a temporary retention method for saddling and packing stock. Hitching lines should be made of rope and when attached to trees, the trees should be padded to prevent damage. *These lines should be considered a temporary retention method for saddling and packing stock and are not to be used for an extended period of time. Hitching lines should be moved as often as necessary to minimize trampling and soil compaction.* Some sites may have designated hitching line areas to contain use in already impacted locations. Follow site specific-instructions when given.

Spreading Manure

- All manure must be removed from **a radius of 100 feet around** the core camp and from hitching line areas and must be scattered in any area(s) where stock are retained (by electric fence, pickets, hobbles, drag logs, etc.), and an effort must be made to scatter manure in other grazing areas.

- Manure must be removed from trailhead parking and loading areas.

Drop Camps

- When providing drop camp service to a non-stock site, the Concessioner must keep all stock out of the core-camp at all times (see core-camp definition). Stock shall not be retained near the perimeter of the core camp longer than is necessary to unload clients and gear, except to serve mobility-impaired clients.

- Retention or grazing of stock in the vicinity of non-stock campsites longer than is reasonably necessary to drop off or load people and equipment or set up camp is not authorized. Should it become necessary to retain stock longer, they must be kept at least 100 yards away from the core camp and sleeping areas and all other stock retention requirements apply.

CAMPSITE/ENVIRONMENT

Camp Organization

- No permanent improvements such as corrals, tables, hitch rails, nails in trees, etc., may be established. For reasons of sanitation, safety, and resource impacts, wherever possible the sleeping area should be 100 yards from the core-camp and other cooking, eating, and food storage areas that may attract bears. Sleeping areas should also be located well away from established trails, streams, lake shores, and game trails which serve as travel routes for bears. Stock must be kept well away from the food preparation and eating area.

Campfires

- Concessioners are urged to use portable stoves whenever possible and keep the use of wood fires to a minimum. Wood fires are not permitted at some campsites. Where a wood fire is permitted, only dead and down material shall be used for fuel and only the existing fire ring may be used. Fires must be attended at all times. Falling trees (including dead trees) and cutting or breaking limbs off standing trees is prohibited. Before departing camp, the Concessioner must ensure that the fire is completely extinguished. All food remnants, aluminum foil, glass, and other litter, must be removed and packed out (does not include excess cool ashes). The fire pit should be left clean.

Toilet Facilities

- Concessioners should use pit toilets where provided. Do not use toilet holes for trash disposal. Parties of fewer than ten people may dig small, individual holes for disposal of human waste. Carry a shovel or garden trowel for digging small individual “cat-holes.” Cat holes shall be dug at least 10 inches deep, and filled with loose soil after use. Use only biodegradable toilet paper and burn any excess paper before covering the hole, or pack it out with trash. Larger parties (ten or more people) may dig a latrine(s) for use by the entire group. Select sites where digging will not damage root systems. Latrines shall be at least 18 inches deep and completely covered over when human waste reaches a point 10 to 12 inches below ground level and before departing camp. Cat-holes and latrines shall be located at least 100 feet from surface water and 100 feet from the core camp. In addition, commercially available disposable human-waste bags, when used as directed, are a convenient environmentally- conscious method of human waste

disposal. **Regardless of the method utilized, the Concessioner is responsible to see that human waste disposal is done in compliance with this Operating Plan.**

Food Storage

- At night and/or when not attended, all food, garbage, stock feed, ice chests, other scented articles, cooking utensils and stoves shall be suspended at least 10 feet off the ground and at least 4 feet from tree trunks. **"Attended" explicitly means that the Concessioner or an employee is in camp, awake, and in close proximity to the food, garbage, stock feed, cooking utensils, ice chests, and any other scented articles**. It is not required to hang cooking utensils and stoves that have been washed/cleaned and sanitized. Use existing food storage poles when available. Currently, bear-resistant containers must also be suspended in the manner described above. Strain all waste water and burn solids if a fire is available. If no fire is available, broadcast strained wastewater away from sleeping areas and streams/lakes and pack out solids with trash. Polluting or contaminating any water source (with soap, waste, food, etc.) is prohibited.

- Where fires are allowed, all unconsumed food and other combustibles may be burned in the established pit. **All food stuffs must be completely burned or packed out with trash**.

Food Sanitation Guidelines

- All potentially hazardous foods (meat, poultry, dairy products, etc.) must be kept at safe temperatures (over 140º or below 41º F.).

- All raw meats and poultry must be packed separately from foods that will not be further cooked.

- Ready-to-eat lunchmeats and cheeses should be packed in small quantities in moisture-proof bags and must be stored at temperatures of under 41º F.

- All food shall be kept covered when not being cooked or served.

- Remove from refrigeration only the amount of potentially hazardous food required for the meal. Discard all leftover potentially hazardous foods after each meal.

- No home canned foods are allowed to be served and all meats shall be procured from a source approved by the state of origin.

- **Food not prepared "on-site" shall be prepared in an inspected food establishment.**

- Farm and domestic animals must not be within 200 feet of any place where food is prepared, cooked, or served.

- Plastic gloves or sanitized serving utensils must be used for preparing and serving food. No sheath or pocketknives may be used for slicing foods.

- Persons with cuts, abrasions, open blisters, or other blemishes on their hands, shall not prepare food, unless the hands are bandaged and covered with gloves. Persons with symptoms of illness must be kept from handling food.

- All food contact surfaces shall be fabricated for durability and ease of cleaning, i.e., smooth, nonabsorbent, resistant to chipping, and made of safe materials.

- Tables shall be constructed of easily cleanable surfaces. If tablecloths are used, they must be made of nonabsorbent materials such as plastic. Single-service cloths, such as paper tablecloths, must be discarded after each use.

- Adequate hand washing facilities shall be provided to ensure hands are washed before handling food, cooking, eating, and after using the toilet.

- Dishes shall be scraped, washed, rinsed, sanitized, and air-dried. A sanitizing solution for the final rinse may be prepared with chlorine by using two capfuls of household chlorine bleach (5.25% strength) per five gallons of water. Immerse dishes in sanitizing solution for one minute. If paper towels must be used to dry dishes, double sanitizing time is required. (Chlorine test strips should be used to test concentration).

- If drinking water is not from an approved source, it must be boiled, treated with chemicals, or properly filtered to make it potable. Clients should be advised about the risks of drinking untreated water. Drinking water, from a treated source, must be stored in a smooth, cleanable, tightly sealed container.

- Pack sufficient cups to ensure common drinking cups are not used.

Site Clean-Up

- The areas authorized for use under this Contract must be left in substantially the same or better condition as they were prior to the activities authorized herein. Requirements for cleaning campfire pits and toilet facilities and spreading manure are described in earlier sections. All unburned or unburnable manmade items, including but not limited to food, foil, pull tabs, glass, feed sacks, strings/ropes, papers, plastics, and cigarette butts, must be packed out of the Park. The area shall be left clear of litter and picket pins and other stock retention devices. The visual impact of poles used for camp set-up must be minimized, and all poles or logs used for stock retention must be scattered. Reasonable efforts must be made to rehabilitate obvious resource impacts caused by the Concessioner's camping or stock use activities. Such efforts should include, but are not limited to, filling in any divots or depressions caused by Concessioner activities and raking or duffing the core camp and impacted stock retention areas to minimize erosion potential.

- The Concessioner is encouraged to separate recyclable materials from packed-out items and deposit them in recycle bins located at various locations throughout the Park.

RISK MANAGEMENT - SAFETY

The Occupational Safety and Health Act of 1970 and the Service Policy (Director's Order 50) require the Concessioner to provide a safe and healthful environment for all of its employees and clients.

- The Concessioner will review and, *if necessary*, update its Risk Management Plan annually to ensure an appropriate safety program. The Concessioner must submit a copy of its current plan to the Concessions Management Division prior to operating, if it has been updated. The Plan must include, at a minimum, the following components:

  ·Written Safety Policy
  ·Employee Safety Training Program
  ·Accident Prevention/Reporting

- Drivers and all passengers must use seat belts in wheeled vehicles at all times.

- Clients on overnight trips may carry unopened alcoholic beverages in their luggage where it is to remain until clients reach their overnight campsites. Concessioners have the discretion to allow alcoholic beverages on their extended camp trips.

- The Concessioner must ensure that each client is safely equipped and properly clothed prior to the trip. Clients can experience chilly weather (rain, wind, and snow) any time of the year. Clients must be encouraged to wear appropriate clothing and foot wear.

FISHING PERMIT

- **A Yellowstone National Park Fishing Permit is required to fish in the Park. Anglers 16 years of age and older are required to purchase either a $XX three-day permit, a $XX seven-day permit, or a $XX season permit. A permit fee is charged for anyone 16 years of age or older. Children 15 and younger may fish without a permit if they are fishing under the direct supervision of an adult; or children 15 and younger may obtain a free permit that must be signed by a responsible adult. With this permit, a child can fish without direct adult supervision.**