



National Park Service
U.S. Department of the Interior
Bent's Old Fort National Historic Site
La Junta, Colorado

Prairie Restoration Environmental Assessment December 2009



Bent's Old Fort National Historic Site viewing the fort from the visitor trail.

Prairie Restoration

Environmental Assessment

Summary

Bent's Old Fort National Historic Site (BEOL) proposes to restore an 8 acre site immediately surrounding the reconstructed fort. Eight acres of land adjacent to the fort were severely compacted during reconstruction of the fort in 1976 and impacted following the removal of a parking lot once located outside the fort. Current management of the site includes mowing and spraying herbicides to treat weeds mainly the invasive non-native plant kochia. The main goal of this project is to completely restore lands targeted for restoration because of previous disturbance associated with fort reconstruction, parking lot remnants and 20th century agricultural activities.

This Environmental Assessment (EA) examines two alternatives; A) no action, and B) site restoration: soil treatment and seeding. Alternative A, required by National Environmental Protection Act (NEPA), suggests continued maintenance of the area under current management. Under this alternative, National Park Service (NPS) would continue mowing the area and spraying herbicides to control the dominant weedy species, Kochia. Alternative B addresses underlying issues of native plant establishment issues for the area considered for restoration. Natural Resources Conservation Service Society (NRCS) personnel have suggested compaction from previous fort reconstruction activity and parking lot location is inhibiting native plant establishment, mainly through rooting depth constraints. Through this alternative, soil compaction would be alleviated, a seedbed prepared and native species seeded. This would accomplish several objectives determined through the scoping meeting on October 10-11, 2007, including, (1) mitigation of soil compaction from previous parking lot and construction lot to facilitate native plant development and persistence, (2) reduction of visual impacts from 20th century agricultural activities to improve visitor experience, (3) eliminate exotic species as a seed source in the immediate area, and (4) reduction of maintenance costs in the long term.

This EA has been prepared in compliance with the 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 Bent's Old Fort National Historic Site resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics included in this document because the resultant impacts may be greater-than-minor include visitor use and experience; soils and vegetation. 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 was conducted to assist with the development of this document and comments were received, all were in support of the proposed project.

Public Comment

If you wish to comment on the environmental assessment, you may post comments online at <http://parkplanning.nps.gov/flfo> or mail comments to: Superintendent; Bent's Old Fort National Historic Site, La Junta, Colorado 81050.

This environmental assessment will be on public review for 30 days starting December 16, 2009 to January 14, 2009. 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 can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we would be able to do so.

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PURPOSE AND NEED

Introduction

William and Charles Bent, along with Ceran St. Vrain, built the original fort on this site in 1833 to trade with plains Indians and trappers. The adobe fort quickly became the center of the Bent, St.Vrain Company's expanding trade empire that included Fort St.Vrain to the north and Fort Adobe to the south, along with company stores in Mexico at Taos and Santa Fe. The primary trade was with the Southern Cheyenne and Arapaho Indians for buffalo robes.

For much of its 16-year history, the fort was the only major permanent white settlement on the Santa Fe Trail between Missouri and the Mexican settlements. The fort provided explorers, adventurers, and the U.S. Army a place to get needed supplies, wagon repairs, livestock, good food, water and company, rest and protection in this vast "Great American Desert." During the war with Mexico in 1846, the fort became a staging area for Colonel Stephen Watts Kearny's "Army of the West". Disasters and disease caused the fort's abandonment in 1849. Archeological excavations and original sketches, paintings and diaries were used in the fort's reconstruction in 1976.

The original 178-acre site including the fort was listed on the National Register of Historic Places on October 15, 1966 because of its national significance. The fort/site commemorates the Bent-St. Vrain trading empire (stretching from Arizona and Utah to Missouri) and symbolizes cultural impacts on Plains Indians, Westward Expansion, and the War with Mexico.

Eight acres of land adjacent to the fort were severely compacted during reconstruction of the fort in 1976 and impacted again following the removal of a parking lot once located outside the fort. It is desirable to design and implement a restoration plan (RP) for the 8 acres of land adjacent to the fort that would preserve the integrity and interpretability of the cultural landscape surrounding BEOL. Ninety-nine percent of the 30,000 annual visitors walk past the 8 acres of degraded lands that are located within 25 feet of the fort walls. Additionally, restoration of native vegetation species and the elimination of exotic species in the 8 acre area adjacent to the fort is an overall objective of the park's General Management Plan (GMP), Resource Management Plan, Strategic Plan and Fire Management Plan. Restoration of this area with native species is integral to the site's significance and the interpretation of it.

The purpose of this environmental assessment is to examine the environmental impacts associated with the proposal to restore an 8-acre section of the prairie surrounding the Bent's Old Fort. This environmental assessment was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 CFR §1508.9),

and the National Park Service Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-Making*).

Background

In 1976, the fort was reconstructed and surrounding areas were restored to native prairie to conserve the cultural landscape. The reconstructed fort is the only visitor destination at BEOL and is the focus of interpretive programs and living history demonstrations. Restoration of the natural areas surrounding the fort included the relocation of the visitor parking lot, the construction of a small trail to access the fort, and the construction of berms to hide modern intrusions from the fort viewshed. Unfortunately, restoration of the visitor parking lot closest to the fort and areas affected by fort reconstruction were not successful and is being re-addressed in this EA.

The integrity of the cultural landscape surrounding BEOL is important for interpretation of the site and the visitor experience. Currently remnants of 20th century agricultural activities, fort reconstruction and parking lot relocation dominate 8 acres adjacent to the fort and heavily impact a majority of visitors annually. The current cultural landscape surrounding the fort is not indicative of the 1830's when the fort was originally occupied.

Purpose and Need

The purpose and need for this project is to completely restore lands targeted for restoration because of previous disturbance associated with fort reconstruction, parking lot remnants and 20th century agricultural activities. The subsequent objectives include:

- (1) mitigation of soil compaction from previous parking lots and construction to facilitate native plant establishment and persistence,
- (2) reduce visual impacts from 20th century agricultural activities to improve visitor experience,
- (3) eliminate exotic species as a seed source in the immediate area, and
- (4) reduce long-term maintenance costs.

Relationship to Other Plans and Policies

Current plans and policy that pertain to this proposal include the 1994 Bent's Old Fort National Historic Site *General Management Plan* (NPS 1994), the 2009 Strategic Plan (NPS 2008), and the 2006 *Management Policies* (NPS 2006). Following is more information on how this proposal meets the goals and objectives of these plans and policies:

- This project is consistent with the 1994 Bent's Old Fort National Historic Site's General Management Plan, which proposes restoring the prairie surrounding the fort. The general management plan identifies the actions, impacts, and mitigating measures necessary to resolve the issues facing the historic site.
- The prairie restoration is identified as a goal in the 2009 Strategic Plan for Bent's Old Fort National Historic Site. The restoration goal recommends restoring 9 acres of previously disturbed park land. The goals have been identified by park staff and are reported to Congress through the Government Performance Results Act of 1993.
- NPS Director's Order #28 Cultural Resource Management Guidelines addresses cultural landscapes are (1) associated with events that have made a significant contribution to patterns in our history, (2) associated with persons of significance in our past, (3) embody the characteristics of a type, period or method of construction, or (4) have yielded information important for historical interpretation are considered for listing on the National Register of Historical Places (NRHP; *National Register Bulletin, How to Apply the National Register Criteria for Evaluation*). The portion of BEOL containing the fort and surrounding cultural landscape is listed on the NRHP.
- The proposal is consistent with the goals and objectives 4.4.2.2. Restoration of Native Plants and Animal Species found in the *2006 National Park Service Management Policies* (NPS 2006). This section states that "the Service will strive to restore extirpated native plant species".

Appropriate Use

Section 1.5 of *Management Policies* (2006), "Appropriate Use of the Parks," directs that the National Park Service must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts on, park resources and values. A new form of park use may be allowed within a park only after a determination has been made in the professional judgment of the park manager that it would not result in unacceptable impacts.

Section 8.1.2 of *Management Policies* (2006), Process for Determining Appropriate Uses, provides evaluation factors for determining appropriate uses. All proposals for park uses are evaluated for":

- consistency with applicable laws, executive orders, regulations, and policies;
- consistency with existing plans for public use and resource management;
- actual and potential effects on park resources and values;
- total costs to the Service; and
- whether the public interest would be served.

Park managers must continually monitor all park uses to prevent unanticipated and unacceptable impacts. If unanticipated and unacceptable impacts emerge, the park manager must engage in a thoughtful, deliberate process to further manage or constrain the use, or discontinue it.

From Section 8.2 of *Management Policies*: “To provide for enjoyment of the parks, the National Park Service would encourage visitor use activities that

- are appropriate to the purpose for which the park was established, and
- are inspirational, educational, or healthful, and otherwise appropriate to the park environment; and
- would foster an understanding of and appreciation for park resources and values, or would promote enjoyment through a direct association with, interaction with, or relation to park resources; and
- can be sustained without causing unacceptable impacts to park resources and values.”

Native plant restoration efforts are a common practice within the National Park Service and are used by all federal land management agencies. Proper techniques and methods would ensure that unacceptable impacts to park resources and values do not occur. The proposed prairie restoration is consistent with the park’s general management plan and other related park plans. With this in mind, the NPS finds that prairie restoration at Bent’s Old Fort NHS is an acceptable use. Ecological restoration of an area within view of the fort at BEOL would improve visitor experience and the integrity of the park is an appropriate use.

Impairment and Conservation of Park Resources and Values

National Park Service’s *Management Policies, 2006* require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may, but does not necessarily, constitute impairment, but an impact would be more likely to constitute impairment when there is a major or severe adverse effect upon a resource or

value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in the *Environmental Consequences* section for natural and cultural resource topics.

In addition to mandating the prevention of impairment, the Organic Act requires that the NPS prioritize conservation over use whenever the two are found to be in conflict. The NPS complies with this mandate by ensuring that a proposed use of the parks would not result in unacceptable impacts to park resources and values.

Internal and Public 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. Bent's Old Fort National Historic Site conducted internal scoping with appropriate National Park Service staff. The historic site also conducted external scoping with the public and interested/affected groups and Native American consultation.

The restoration plan was discussed in a meeting between NPS natural resource managers and maintenance personnel, park curator, and a UW soil scientist/restoration specialist October 10-11, 2007. Natural Resources Conservation Service Society (NRCS) personnel have suggested compaction from previous fort reconstruction activity and parking lot location is inhibiting native plant establishment mainly through rooting depth constraints.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposal to restore native prairie, and to generate input on the preparation of this environmental assessment. The scoping letter dated August 11, 2009 was mailed to over 125 addresses including adjacent landowners, various federal and state agencies, affiliated Native American tribes, local government and local news agencies. A press release was also issued to local print and electronic media. Scoping information was also posted on the National Park Service Planning, Environment and Public Comment website.

During the 30-day scoping period, approximately nine public responses were received. All the respondents had no objections to the restoration efforts if the management of the site did not change or become more restrictive of its use.

Figure 1 – Project Location

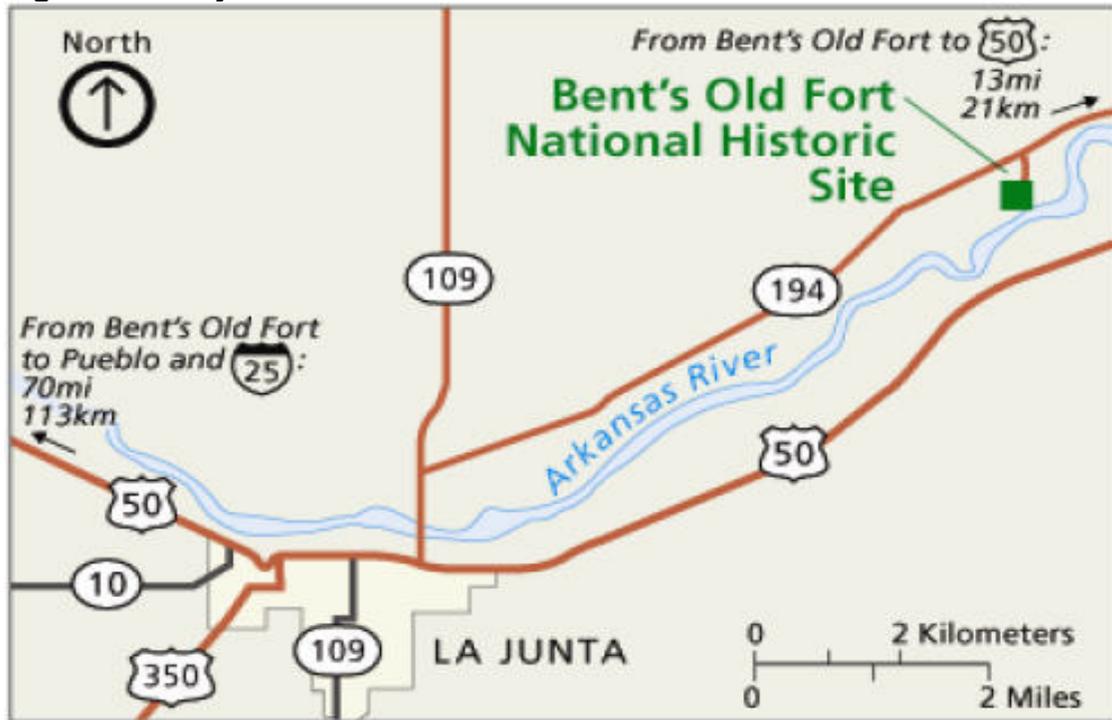


Figure 1. Location map for Bent's Old Fort National Historic Site. Bent's Old Fort was utilized from 1833-1849 as a trading station on the Santa Fe Trail. Today, the fort is paralleled by Hwy 194 to the north and Hwy 50 to the south.

Impact Topics Retained For Further Analysis

In this section and the following section on *Impact Topics Dismissed from Further Analysis*, 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. Impacts are described in terms of context and duration. The context or extent of the impact is described as localized or widespread. The duration of impacts is described as short-term, ranging from days to three years in duration, or long-term, extending up to 20 years or longer. The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. The NPS equates “major” effects as “significant” effects. The identification of “major” effects would trigger the need for an EIS. Where the intensity of an impact could be described quantitatively, the numerical data is presented; however, most impact analyses are qualitative and use best professional judgment in making the assessment.

The NPS defines “measurable” impacts as moderate or greater effects. It equates “no measurable effects” as minor or less effects. “No measurable effect” is used by the NPS in determining if a categorical exclusion applies or if impact topics may be dismissed from further evaluation in an EA or EIS. The use of “no measurable effects” in this EA pertains to whether the NPS dismisses an impact topic from further detailed evaluation in the EA. The reason the NPS uses “no measurable effects” to determine whether impact topics are dismissed from further evaluation is to concentrate on the issues that

are truly significant to the action in question, rather than amassing needless detail in accordance with CEQ regulations at 1500.1(b).

In this section of the EA, NPS provides a limited evaluation and explanation as to why some impact topics are not evaluated in more detail. Impact topics are dismissed from further evaluation in this EA if:

- they do not exist in the analysis area, or
- they would not be affected by the proposal, or the likelihood of impacts are not reasonably expected, or
- 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.

Due to there being no effect or no measurable effects, there would either be no contribution towards cumulative effects or the contribution would be low. 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 and indirect, and cumulative effects is presented. There is no impairment analysis included in the limited evaluations for the dismissed topics because the NPS's threshold for considering whether there could be impairment is based on "major" effects.

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders; 2006 *Management Policies*; and National Park Service knowledge of resources at Bent's Old Fort National Historic Site. Impact topics that are carried forward for further analysis in this environmental assessment are listed below along with the reasons why the impact topic is further analyzed. For each of these topics, the following text also describes the existing setting or baseline conditions (i.e. affected environment) within the project area. This information would be used to analyze impacts against the current conditions of the project area in the *Environmental Consequences* chapter.

Visitor Use and Experience

According to 2006 *Management Policies*, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units (NPS 2006). The National Park Service is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and would maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the National Park Service would provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. The National Park Service 2006 *Management Policies* also state that scenic views and visual resources are considered highly valued associated characteristics that the National Park Service should strive to protect (NPS 2006).

Visitor experience is enhanced by the surrounding cultural landscape. Each visitor to BEOL is immediately submerged in 1840's culture with interpretive staff dressed in period costume. Surrounding landscapes impacted by 20th century agricultural activities detracts from that experience. With restoration, the short-term activities would impact

negatively visitor experience; however, the long-term benefits would enhance visitor experience. Approximately 30,000 visitors come through BEOL annually and majority of those visitors are exposed to the degraded land surrounding the fort. Because the proposed project would alter some visitor activities and cause some disturbance to their experience this topic is being carried forward for further analysis.

Topography, Geology, and Soils

According to the National Park Service's 2006 *Management Policies*, the National Park Service would preserve and protect geologic resources and features from adverse effects of human activity, while allowing natural processes to continue (NPS 2006). These policies also state that the National Park Service would strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

Bent's Old Fort NHS is not labeled a "geologic" park, but is considered part of the geologic heritage of the Great Plains. The fort is located on the rolling hills and flatlands of the Colorado Piedmont which ranges in elevation from 1212 m where the Arkansas River enters Bent County to 1585 m by Delhi, Colorado. Tertiary rock in this area has been carved by the Arkansas River to the south and the South Platte River to the north of the Piedmont. No Tertiary rock remains in the vicinity of the fort; however, there are Quaternary terraces overlying Cretaceous shale and limestone surrounding BEOL. Fluvial features dominate the landscape (NPS, 2005).

Soils at and surrounding BEOL are of the Rocky Ford/Numa/Nepesta clay soils. More specifically in the area proposed for restoration, 46.8% of soils in the area are considered Numa clay loam soils (3.6 acres), 33.1% of soils in the area are considered Rocky Ford silty clay loam soils (2.6 acres) and the remaining 20.1% of soils in the area are considered Rocky Ford loam soils (1.6 acres) (NRCS, 2007). Due to the similarity in texture of the top 18-24 inches of soils present on the site, both soil types would be treated the same for ripping, seedbed preparation and seed mixes. If a noticeable difference occurs during the restoration the plan would be revised.

Soils have been highly compacted in proposed restoration area as a result of reconstruction of the fort in 1975 as well as from the previous existence of a parking lot adjacent to the fort. Though the compacted area is relatively small, it has reduced native vegetation, which could result in increased runoff and sediment transport. For a successful native species prairie restoration, soil compaction needs to be alleviated to allow for the establishment of deep rooted species consistent with a diverse native plant community. Due to the impact to soils this topic of has been retained for further analysis.

Vegetation

According to the National Park Service's 2006 *Management Policies*, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2006).

The native vegetation of the area is consistent with dry steppe habitat of southeastern Colorado. Arid grass, forb and shrub species dominate the landscape; i.e. blue grama, buffalo grass, needle-and-thread grass; goldenrod and sunflowers; sagebrush and non-native rabbitbrush. Tree species include cottonwood, and several species of willow. There are three ecotypes described by the NPS (1994) which include prairie or potential prairie recovering from agricultural activities, wetlands, and riparian vegetation. The upland grassland area where the restoration would occur was considered Kuchler Vegetation type prior to disturbance.

As a result of the soil compaction from fort reconstruction and previous parking lot location, the Kuchler Vegetation type has been replaced with monocultures of Kochia. Without restoration, Kochia dominance would be promoted and persist. Wetlands surrounding the area would remain threatened by Kochia seed distribution. Disturbance of vegetation in the project area is expected to result in minor to moderate impacts to vegetation. The proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. The impact to vegetation is considered minor to moderate and both beneficial and adverse the NPS has chosen to carry this impact topic forward, further analysis it will be carried forward.

Impact Topics Dismissed From Further Analysis

Park Operations

The proposed action of prairie restoration, would neither change nor appreciably impact park operations. Implementation of the proposed action could provide a negligible to minor beneficial impact to the staff within the resource management program by reducing the acreage of exotic plants needing treatment. Further, such minor or negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Wildlife

According to the National Park Service's *2006 Management Policies*, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2006). Wildlife commonly found in the vicinity of the project area includes white-tailed deer, birds, small mammals and reptiles. The project area is disturbed by humans and wildlife have adapted to the presence of the visitors and staff.

The presence of humans have removed or displaced some native wildlife habitat in the project area. Some smaller wildlife species such as rodents, reptiles, and their habitat may be displaced or eliminated during restoration activities. Since the disturbed areas would be re-vegetated with native species, the resulting prairie would have beneficial and negligible to minor impact to the wildlife and wildlife habitat.

Further, such minor or negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006.

Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Special Status Species

The Endangered Species Act of 1973 requires examination of impacts on all federally-listed threatened, endangered, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the 2006 *Management Policies* and Director's Order-77 *Natural Resources Management Guidelines* require the National Park Service to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species (NPS 2006). For the purposes of this analysis, the U.S. Fish and Wildlife Service and the Colorado Division of Wildlife were contacted with regards to federally- and state-listed species to determine if any species could potentially occur on or near the project area.

The following species were listed as threatened or endangered in Otero County, CO. Black-footed ferret (*Mustela nigripes*), Peregrine falcon (*Falco peregrinus*), Bald Eagle (*Haliaeetus leucocephalus*), Whooping crane (*Grus americana*), Eskimo curlew (*Numenius borealis*), Piping plover (*Charadrius melodus*), and Least tern (*Sterna antillarum*). Historically the Black-footed ferret has been associated with prairie dog colonies; however, none of these exist in close proximity to proposed area for restoration. Additionally the six species of birds listed as potential migrants in the area would likely not be impacted due to lack of perches in the immediate proximity of the area proposed for restoration. If any endangered species are encountered during restoration, activity would cease.

A letter was sent to the U.S. Fish and Wildlife Service indicating that there are no records of threatened or endangered species in the project area, and that no further consultation under §7 of the Endangered Species Act is necessary. Likewise, a letter sent to the Colorado Division of Wildlife indicated there are no state-listed species or designated critical or essential habitat in the proposed project area.

Protection under the Migratory Bird Treaty Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition, this act serves to protect environmental conditions for migratory birds from pollution or other ecosystem degradations. Some migratory birds may be potential transients of the general area, but the immediate project area contains little to no suitable habitat for migratory birds. There are no known nesting sites in this area, and these lands are not vital for foraging or roosting. Construction-related noise could potentially disturb transient bird species, but these adverse impacts would be 1) temporary, lasting only as long as construction, and 2) negligible, because suitable habitat for transient birds is found throughout the region.

No threatened, endangered, or other species of concern are known to occur in the project area, and impacts to transient bird species would be temporary and negligible. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis.

Water Resources

National Park Service policies require protection of water quality consistent with the Clean Water Act. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To enact this goal, the U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in potential degradation of waters of the United States and issuing permits for actions consistent with the Clean Water Act. The U.S. Environmental Protection Agency also has responsibility for oversight and review of permits and actions, which affect waters of the United States.

The proposed project area does not contain surface waters, and is mostly dry, except for periodic runoff during storm events. Water quality, water quantity, and drinking water are not expected to be affected by the project. The size of the new administration building's footprint (approximately 2,500 square feet) would increase the amount of impervious surface in the area, which could possibly increase the erosion potential of the area; however, removal of the existing administration building and two yurt structures should offset or mitigate this effect. To further assist with erosion and water quality, disturbed areas would be revegetated and recontoured following construction. The proposed action would result in negligible effects to water resources. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Wetlands

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Executive Order 11990 *Protection of Wetlands* requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, §404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge or dredged or fill material or excavation within waters of the United States. National Park Service policies for wetlands as stated in 2006 *Management Policies* and Director's Order 77-1 *Wetlands Protection* strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In accordance with DO 77-1 *Wetlands Protection*, proposed actions that have the potential to adversely impact wetlands must be addressed in a statement of findings for wetlands.

No wetlands are located in the project area; therefore, a statement of findings for wetlands would not be prepared. Further, there would be no unacceptable impacts to wetlands; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because there are no wetlands in the project area and because there would be no unacceptable impacts, this topic is dismissed from further analysis in this document.

Floodplains

Executive Order 11988 *Floodplain Management* requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The National Park Service under 2006 *Management Policies* and Director's Order 77-2 *Floodplain Management* would strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order 77-2 *Floodplain Management*, certain construction within a 100-year floodplain requires preparation of a statement of findings for floodplains.

The project area is not within a 100-year floodplain; therefore, a statement of findings for floodplains would not be prepared. Further, there would be no unacceptable impacts to floodplains; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because there are no floodplains in the project area, and thus there would be no unacceptable impacts, this topic is dismissed from further analysis in this document.

Archeological Resources

In addition to the National Historic Preservation Act and the National Park Service 2006 *Management Policies*, the National Park Service's Director's Order-28B *Archeology* affirms a long-term commitment to the appropriate investigation, documentation, preservation, interpretation, and protection of archeological resources inside units of the National Park System. As one of the principal stewards of America's heritage, the National Park Service is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. Archeological resources are nonrenewable and irreplaceable, so it is important that all management decisions and activities throughout the National Park System reflect a commitment to the conservation of archeological resources as elements of our national heritage.

Archeological remains located at BEOL include the original fort, the reconstructed fort, the Daughters of the American Revolution stone arch, the surrounding cultural landscape (NPS, 1999) and other known archeological resources (trash dump and a prehistoric site). Over 22% of the 799.8 acres included in BEOL are listed on the NRHS (NPS, 1999) and are deemed significant to our culture and history. There are still some archeological features that have not been located, including the icehouse, a racetrack, and an Indian scaffold cemetery. All three are mentioned in historical literature and are believed to be in the vicinity of the fort.

Per a conversation with Robert Leonard (archeologist present during fort reconstruction, conversation on 11-9-07), the previous parking lot area was raised above ground level with construction or archeological backfill material. It is entirely possible that there are archeological artifacts under the backfilled area (including fire pits, teepee rings, or foundations of structures); however, this is unknown. It is also possible that artifacts out of context would be in the affected area. Because of this, an archeologist would be on hand during the ripping to ensure that no artifacts are disturbed as a result of the restoration activities.

The south side of the proposed area for restoration was likely used as an area for making adobe during for reconstruction or was used for heavy equipment parking. It is

unsure whether artifacts would be found on the south end; however, an archeologist would be on hand during the restoration activities. In addition to the test pits in the area to determine the depth of compaction, resistivity or metal detection is an option for finding artifacts or if possible the original racetrack for the fort. However, due to compaction, resistivity might not be able to locate the race track. Most of the cultural artifacts discovered have been to the south of the fort and Arkansas River, while very few artifacts have been discovered to the north of the fort where the restoration would occur.

Because the project would not disturb any known archeological sites, the affect of the project on archeological resources is expected to be negligible. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Ethnographic Resources

National Park Service's Director's Order-28 *Cultural Resource Management* defines ethnographic resources as any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. According to DO-28 and Executive Order 13007 on sacred sites, the National Park Service should try to preserve and protect ethnographic resources.

There is no known published ethnohistorical or ethnographic research for the area. The parks archeological collection contains ethnographic tools (such as textile fragments and tools). Two tribes (Southern Cheyenne and Southern Arapaho nations) occupied the area in the 1840's and there is strong evidence supporting the displacement of the Apache, Comanche, and Kiowa Indians prior to the 1800's. Descendants of William Bent and his Indian wife continue to play important roles in the Southern Cheyenne and Arapaho tribes of Oklahoma (BEOL GMP, 1995).

Native American tribes traditionally associated the historic site were apprised of the proposed project in a scoping brochure dated August 11, 2009 and no responses were received from these tribes. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Historic Structures

The National Park Service, as steward of many of America's most important cultural resources, is charged to preserve historic properties for the enjoyment of present and future generations. According to the National Park Service's 2006 *Management Policies and Director's Order-28 Cultural Resource Management*, management decisions and activities throughout the National Park System must reflect awareness of the irreplaceable nature of these resources (NPS 2006).

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties and to afford the

Advisory Council on Historic Preservation an opportunity to comment in the consultation process. More information about this consultation can be found in the *Consultation and Coordination* chapter.

The project area contains no historic structures eligible for the National Register of Historic Places. Therefore, the topic of historic structures has been dismissed from further analysis. No adverse effect or unacceptable impacts would occur to historic structures; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006.

Cultural Landscapes

According to the National Park Service's Director's Order-28 *Cultural Resource Management Guideline*, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built.

The integrity of the cultural landscape surrounding Bent's Old Fort is important for interpretation of the site and visitor experience. Currently remnants of 20th century agricultural activities, fort reconstruction and parking lot relocation dominate 8 acres adjacent to the fort and heavily impact a majority of visitors annually. The current cultural landscape surrounding the fort is not indicative of the 1830's when the fort was originally occupied. As a result of the Directors Orders #28 and goals of preservation stated above, impacts to BEOL (as with all sites listed on the NRHP) must be consulted with the State Historic Preservation Officers (SHPO).

The eight acres in question fall within the boundaries of the Bent's Old Fort National Historic Site, a National Register listed site and National Historic Landmark. Prior to NPS ownership the area was heavily cultivated for many years, which was followed by traffic of heavy vehicles. It is anticipated that the work to be done would cause little if any impact to the integrity of the site, and would result in minor improvements to the cultural landscape associated with the overall site. However there are other areas within the viewshed that will be restored to adequately present the cultural landscape.

No unacceptable impacts are expected to occur; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because no contributing structures are likely present within the project area, there would be no unacceptable impacts to cultural landscapes; this topic is dismissed from further analysis in this document

Paleontological Resources

According to 2006 *Management Policies*, paleontological resources (fossils), including both organic and mineralized remains in body or trace form, would be protected, preserved, and managed for public education, interpretation, and scientific research (NPS 2006).

Since the project area is highly disturbed and no paleontological resources have been identified on the historic site, there are no to negligible impacts to paleontological resources as a result of this proposal and they will be dismissed from further assessment. If concealed paleontological resources are encountered during project activities, all necessary steps will be taken to protect them and to

notify the Park Consulting Archeologist immediately. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Museum Collections

According to Director's Order-24 *Museum Collections*, the National Park Service requires the consideration of impacts on museum collections (historic artifacts, natural specimens, and archival and manuscript material), and provides further policy guidance, standards, and requirements for preserving, protecting, documenting, and providing access to, and use of, National Park Service museum collections. Further, no impacts are anticipated the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

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. Bent's Old Fort National Historic Site is designated as a Class II air quality area under the Clean Air Act. A Class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in §163 of the Clean Air Act. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts (EPA 2000).

Local air quality would be temporarily impacted by dust and heavy equipment emissions. Dust, hydrocarbons, nitrous oxides (NO_x), and sulfur dioxide (SO₂) emissions would rapidly dissipate by air drainage. Water applications may be used to help control dust immediately following seedbed preparation. These impacts would last only as long as ripping, seedbed preparation and seeding during restoration are occurring and would be minimal compared to agricultural activities in the surrounding areas. Additionally, BEOL Class II air quality would not be expected to experience any long term effects associated with the restoration. Further, because the Class II air quality would not be affected, there would be no unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because there would be no effects on air quality, and the proposed actions would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Soundscape Management

In accordance with 2006 *Management Policies* and Director's Order-47 *Sound Preservation and Noise Management*, an important component of the National Park Service'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 soundscape 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 National Park Service units as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

The areas surrounding and included in BEOL provide a serenity that is representative of the 1840's when the fort was occupied without too much interference from current man-made noises. The soundscape is filled with natural sounds of songbirds, winds blowing across tall grasses, flowing water in the Arkansas River and occasional thunderstorms. Other noises include those of a crackling fire and murmurs of voices as visitors tour the fort. Occasionally, the man-made sounds of vehicles and agricultural equipment from surrounding fields can be heard. During interpretive events at the fort, music and other cultural noises can be heard and are means to mimic sounds that would have been heard when the fort was occupied in the 1840's.

The natural soundscape of the park is vital to cultural interpretations and noises occurring during the prairie restoration would impact the natural soundscape. Though these interruptions in the natural soundscape are temporary and done in low visitation seasons, every effort would be taken to complete the restoration in a timely manner and reduce noise impacts.

During the restoration process, human-caused sounds would likely increase due to equipment, vehicular traffic, and crews. Any sounds generated from the restoration would be temporary, lasting only as long as the activity is generating the sounds, and would have a negligible to minor adverse impact on visitors and employees. Further, such negligible or minor impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are minor or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Lightscape Management

In accordance with 2006 *Management Policies*, the National Park Service strives to preserve natural ambient lightscares, which are natural resources and values that exist in the absence of human caused light (NPS 2006). Bent's Old Fort National Historic Site strives to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements. The historic site's also strives to ensure that all outdoor lighting is shielded to the maximum extent possible, to keep light on the intended subject and out of the night sky.

The prairie restoration project will have no effects on the existing outside lighting or natural night sky of the area. Further, such negligible impacts would not result in any unacceptable impacts; the proposed actions are consistent with §1.4.7.1 of NPS *Management Policies* 2006. Because these effects are negligible or less in degree and would not result in any unacceptable impacts, this topic is dismissed from further analysis in this document.

Socioeconomics

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Implementation of the proposed action could provide a negligible beneficial impact to the economies of nearby La Junta, Colorado, due to minimal increases in employment opportunities for the workforce and revenues for local businesses and governments generated from these additional activities and workers. Any increase in workforce and revenue, however, would be temporary and negligible. Because the impacts to the socioeconomic environment would be negligible, this topic is dismissed.

Prime and Unique Farmlands

The Farmland Protection Policy Act of 1981, as amended, requires federal agencies to consider adverse effects to prime and unique farmlands that would result in the conversion of these lands to non-agricultural uses. Prime or unique farmland is classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), and is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to the NRCS, the project area does not contain prime or unique farmlands (NRCS 2003). Because there would be no effects on prime and unique farmlands, this topic is dismissed from further analysis in this document.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

There are no Indian trust resources at Bent's Old Fort National Historic Site. The lands comprising the historic site are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Because there are no Indian trust resources, this topic is dismissed from further analysis in this document.

Environmental Justice

Executive Order 12898 *General 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. Because the restored grassland would be available for use by all park staff regardless of race or income, and visitors of all race or income, the proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities. Because there would be no disproportionate effects, this topic is dismissed from further analysis in this document.

Climate Change and Sustainability

Although climatologists are unsure about the long-term results of global climate change, it is clear that the planet is experiencing a warming trend that affects ocean currents, sea levels, polar sea ice, and global weather patterns. Although these changes would likely affect winter precipitation patterns and amounts in the historic site, it would be speculative to predict localized changes in temperature, precipitation, or other weather changes, in part because there are many variables that are not fully understood and there may be variables not currently defined. Therefore, the analysis in this document is based on past and current weather patterns and the effects of future climate changes are not discussed further.

ALTERNATIVES

In October of 2007 the interdisciplinary team was formed with participants from the NPS and University of Wyoming (UW). Two resource managers (both with vegetation and restoration experience), one curator, one maintenance personnel and one intern were selected from NPS BEOL. One reclamationist/soil scientist and one ecologist were selected from UW to develop a restoration plan and suggest restoration techniques.

An initial scoping meeting was held October 10-11, 2007 at BEOL in La Junta, CO. During this meeting; 1) goals/objectives/strategies, 2) alternatives, and 3) environmental issues and impacts were discussed. In the weeks following the scoping meeting, goals and alternatives were refined.

A total of two action alternatives and the no-action alternative were originally identified for this project. Of these, one of the action alternatives was dismissed from further consideration for various reasons. One action alternative and the no-action alternative are carried forward for further evaluation in this environmental assessment. A summary table comparing alternative components is presented at the end of this chapter.

Alternatives Carried Forward

Alternative A – No-Action

Under this alternative, current management strategies would continue on the eight acre area. Kochia would continue to be controlled using mowing and spraying. The visual impact to visitors would continue. Interpretive staff would continue to address visitor questions related to surrounding cultural landscape.



Figure 2. Aerial photograph of BEOL. Change in vegetation observed from aerial photograph of proposed area for restoration. Surrounding agricultural fields indicate current land use for the region surrounding BEOL.

Alternative B – Site Restoration (Soil Treatment and Seeding)

The proposed actions described below collectively comprise Alternative B the “action alternative” analyzed within this document. After extensive planning efforts and public involvement, it was determined that the purpose and need for action could be accomplished through the proposed Alternative B.

Alternative B would contribute to improving the historic landscape at Bent’s Old Fort as well as improving the natural resources.

Natural Resources

- Though geology and paleontological resources would not be impacted by the deep ripping (up to 24 inches) and seedbed preparation, soils would be. The soils were compacted during fort reconstruction and as the result of a parking lot located next to the fort previously. Alternative B would result in the alleviation of the compacted soils and seedbed preparation for the establishment of a native plant community, which would in turn reduce the promotion of non-native species.
- Seeding of native species to out-compete noxious weeds would result in a more sustainable, natural ecosystem surrounding the fort as well as reduce noxious weed seed sources for surrounding wetlands.
- There is the potential during restoration for impacts on air and water quality. For instance, emissions from equipment used to treat soils and seed native species could impact air quality in the short term. However, surrounding agricultural activities

result in the same emissions of NO_x and SO₂. Additionally, increased detachment, entrainment and transport of soil particles as a result of the reduced cover during restoration could affect water quality. Measures would be taken to control erosion and minimize discharge into water resources.

Visitation

- Visitor experience and use would be impacted during restoration activities for a short period during the off season. Interpretation of the surrounding landscape would be minimal during this time period and soundscapes interrupted by equipment operation. The long-term benefits would likely outweigh the short term nuisances. During the restoration, interpretive staff could hand out pamphlets explaining the process and the importance of restoration (see appendix for example of pamphlet). Opportunities to explain the importance of restoration from a land stewardship point of view would be taken.

Cultural Resources

- An archeologist would be on hand during restoration activities to monitor the finding of artifacts or other cultural locations. Since most of the cultural artifacts have been discovered to the south of the fort by the Arkansas River and very little to the north of the fort, we do not anticipate many archeological findings.

The outlined strategy was determined based on several restoration handbooks (Lyle, 1987; Munshower, 1994; Whisenant, 1999) and will address *all* of the above stated objectives. Implemented restoration techniques will likely be a combination of those listed below under the advisement and maintenance of NPS personnel.

- Current site has been previously graded; however, some minimal re-grading may occur to divert water flow from fort walls. Additionally, a backhoe would be used to trench three test pits in the affected area to determine the depth of the compacted zone and the uniformity of the compaction across the 8 acres. This would ensure that the contractor does not rip below the compacted zone in the following restoration step.
- *Primary Tillage:* topsoil would be ripped 18-24" to alleviate compaction in rooting zone from previous parking lot and construction lot activities. The soil would not be ripped below the impacted zone and ripping would be monitored by an archeologist. Utility lines, which are buried at 4 feet, would be avoided during this process. Ripping the soil would improve aeration, root penetration, water infiltration, storage and drainage as well as remove current weedy species (mainly kochia) from the site while protecting cultural resources. Removal of kochia from the site would eliminate exotic species as a seed source in the immediate area.
- *Secondary Tillage:* a seedbed would be prepared with disc harrows to reduce soil clods and to create a suitable seedbed for native species. At this point, additional amendments may be added and mixed into the soil for nutrient deficiencies or other adverse soil properties. The

site would also be re-contoured and furrowed at this point to establish original hydrologic patterns and aide in irrigation treatments.

- *Stubble Mulch*: barley (or similar, sterile species) would be drill seeded and cut prior to seed head production in the fall. The remaining stalks would trap snow to increase water content of the soil at time of seeding and provide shade to decrease soil temperatures during plant establishment. The use of stubble mulch would also ensure the stability of soil until permanent species are established.
- *Seeding*: a seed mix similar to that listed in Table 1 would be drill seeded into the stubble mulch that fall or following spring with a rangeland drill. Fall seeding benefits the establishment of cool season species, while late winter or early spring seeding benefits the establishment of warm season species. For this area, it is recommended that *Bouteloua curtipendula* and *Dalea* species are seeded in the late spring and early summer, while *Aristida* and *Lupinus* species are planted in the mid spring (Diboll, 1997). Islands of forbs would be seeded once grasses establish and weeds are controlled in the area to increase the site biodiversity. Special attention will be focused on blending seeding in the restored area with surrounding areas to eliminate remnants from 20th century agricultural activities. See attached report for more information on seeding times and mixes.
- *Irrigation*: there is the potential for application of irrigation water to restored site to facilitate seed germination and establishment. In this region, restoration success is closely tied to precipitation events. Recommendations from the NRCS would be followed. Briefly, weekly applications are anticipated April through August followed by monthly applications in September and October following restoration. This same pattern would be implemented during the second growing season. The site would only be irrigated monthly June through August during the third growing season if necessary. However, based on precipitation patterns following seeding, irrigation may not be implemented.
- *Weed Control*: Annual weedy species are expected to occupy the site for the first year or two. Establishment of these species would aide in soil stabilization and water infiltration through root penetration. Additionally, organic matter would be added to the soil from these species and stimulate nutrient cycling. Weedy species can be mowed without damaging the newly seeded plants and maintaining 50-70% shading of the surface at a height of approximately 15-25 cm. By the second year of restoration, warm and cool season grasses and forbs seeded in the seed mix would take hold and form a major component of the restored plant community. Weeds would be controlled following establishment of seeded grasses and forbs with spot herbicide applications.

Long-term monitoring: Assessment of perennial species establishment would begin at the end of the second growing season because of weedy species establishment expected in the first two years after seeding. Spot herbicide applications would continue until weedy species pose minimal threat on the restored plant community.

Table 1. Intended seed mix for restoration of site.

Grasses	
<i>Pascopyron smithii</i>	Western wheatgrass
<i>Buchloe dactyloides</i>	Buffalo grass
<i>Bouteloua gracilis</i>	Blue grama
<i>Bouteloua curtipendula</i>	Sideoats grama
<i>Sporobolus cryptandrus</i>	Sand dropseed
Forbs	
<i>Cucurbita foetidissima</i>	Buffalo gourd
<i>Ipomoea leptophylla</i>	Bush morningglory
<i>Coreopsis tinctoria</i>	Plains coreopsis
<i>Ratibida tagetes</i>	Prairie coneflower

Mitigation Measures

The following mitigation measures were developed to minimize the degree and/or severity of adverse effects and would be implemented during construction of the action alternative, as needed:

- To minimize the amount of ground disturbance, staging and stockpiling areas would be in previously disturbed sites, away from visitor use areas to the extent possible. All staging and stockpiling areas would be returned to pre-construction conditions following restoration efforts.
- To address impacts to visitors, an interpretive pamphlet has been developed to explain restoration efforts during the project.
- Employees and restoration crews would be required to park their vehicles in the employee parking lot at the Fort.
- Because disturbed soils are susceptible to erosion until revegetation takes place, standard erosion control measures such as erosion control mats, hay bales and/or sand bags would be used to minimize any potential soil erosion.
- To reduce noise and emissions, construction equipment would not be permitted to idle for long periods of time.
- To minimize possible petrochemical leaks from construction equipment, the contractor would regularly monitor and check construction equipment to identify and repair any leaks.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the historic site's would consult with the

state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, *Post Review Discoveries*. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.

- The National Park Service would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during restoration activities.
- To minimize the potential for impacts to park visitors, variations on restoration activity timing may be considered. One option includes conducting the majority of the work in the off-season (winter) or shoulder seasons.
- Contractor workers and supervisors would be informed about the special sensitivity of historic site's values, regulations, and appropriate housekeeping.

Alternatives Considered and Dismissed

The following alternative was considered for project implementation, but was ultimately dismissed from further analysis. Reasons for their dismissal are provided in the following descriptions.

- Light disking with seeding of shallow rooted native species. This alternative has been attempted twice in the past (1976 and 1995) and has been unsuccessful, therefore it was dismissed from further analysis in this EA. Vegetation transect results from surveys conducted from 1993 to 2001 indicate *Kochia* as a major component of the plant community composition. Even after a reseeding in 1995, *Kochia* remained dominant (48% of the total plant community composition).

Alternative Summaries

Table 1 summarizes the major components of Alternatives A and B, and compares the ability of these alternatives to meet the project objectives (the objectives for this project are identified in the *Purpose and Need* chapter). As shown in the following table, Alternative B meets each of the objectives identified for this project, while the No Action Alternative does not address all of the objectives.

Table 1 – Summary of Alternatives and How Each Alternative Meets Project Objectives

Alternative Elements	Alternative A – No Action	Alternative B – Prairie Restoration
Prairie restoration and cultural landscape	The cultural landscape would continue to be degraded by the evidence of non-native vegetation.	Prairie restoration would be completed and the cultural landscape would better represent the era that the fort portrays.
Soil compaction	Soil compaction would continue to hinder prairie restoration efforts.	Soil compaction would be eliminated as a hindrance to prairie

		restoration.
Non-native plant removal	Monetary expenses will continue to be expended on non-native plant removal as long as the prairie is disturbed.	Once the native species are established it will become more difficult for non-native species to establish. The maintenance of non-native plant removal will be reduced significantly.
Project Objectives	Meets Project Objectives?	Meets Project Objectives?
Mitigate soil compaction and facilitate native plant establishment.	No. This alternative will not address the long-term issue of soil compaction.	Yes. This alternative addresses the problems associated with soil compaction and remedies that issue.
Reduce visual impacts and improve visitor experience.	No. The past attempts have not lead to a sustainable restored prairie.	Yes. The cultural landscape will be improved and the visitor will be able to see a restored prairie.
Eliminate non-native invasive plants.	No. The past restoration attempts have not resulted in a complete removal of exotic species.	Yes. This alternative will aggressively reduce non-native plants. Spot treatment will need to continue.
Reduce long-term maintenance.	No. The no action alternative will continue to treat exotics without a conclusion to the process.	Yes. Once the project is complete maintenance would consist of routine mowing. Sporadic invasive plant removal.

Table 2 summarizes the anticipated environmental impacts for alternatives A and B. Only those impact topics that have been carried forward for further analysis are included in this table. The *Environmental Consequences* chapter provides a more detailed explanation of these impacts.

Table 2 – Environmental Impact Summary by Alternative

Impact Topic	Alternative A – No Action	Alternative B – Preferred Alternative
Vegetation	Vegetation would continue to be disturbed and prairie restoration could not take place.	Vegetation would be restored to a natural condition. The cultural landscape would be improved.
Soils	Soils would continue to be impacted by the previous compaction.	Restoration activities would improve soil condition and elevate soil compaction.
Visitor Use and Experience	Minor adverse impact to visitor use from lack of a historically accurate cultural landscape.	Minor adverse effects resulting from restoration construction activities such as noise and dust. Minor beneficial effects to visitor use from an improved cultural landscape.

Identification of the Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which guides the Council on Environmental Quality (CEQ). The CEQ provides direction that “[t]he environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA’s §101:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

- assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative A, no-action, does not meet the above six evaluation factors because it does not fulfill responsibilities to future generations, it does not create a culturally pleasing surrounding, it is not an environmentally beneficial project, and does not enhance the resources. Alternative B is the environmentally preferred alternative because it best addresses these six evaluation factors. Alternative B, Prairie Restoration, would provide a restored functional prairie while improving the environment for future generations. The restoration efforts would be more environmentally friendly and efficient use of government funds. Alternative B would also reduce the NPS maintenance of the site. Restoration efforts would improve this important cultural resource for future generations.

No new information came forward from public scoping or consultation with other agencies to necessitate the development of any new alternatives, other than those described and evaluated in this document. Because it meets the purpose and need for the project, the project objectives, and is the environmentally preferred alternative, alternative B is also recommended as the National Park Service preferred alternative. For the remainder of the document, alternative B would be referred to as the preferred alternative.

ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of implementing the proposed project. Topics analyzed in this chapter include paleontological resources, visitor use and experience, and park operations. Direct, indirect, and cumulative effects, as well as impairment 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. Are the effects site-specific, local, regional, or even broader?
 - **Duration** describes the length of time an effect would occur, either short-term or long-term:
 - *Short-term* impacts generally last only during construction, and the resources resume their pre-construction conditions following construction.
 - *Long-term* impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
 - **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 environmental assessment.

Cumulative Effects

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), 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 are considered for both the no-action and preferred alternative.

Cumulative impacts were determined by combining the impacts of the preferred alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Bent's Old Fort National Historic Site and, if applicable, the surrounding region. Because the scope of this project is relatively small, the geographic and temporal scope of the cumulative analysis is similarly small. The geographic scope for this analysis includes actions within the historic site's boundaries, while 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:

Administrative Building Development, 2002: The historic site's new administrative office building was completed in 2004. It addressed issues of potential exposure to

Hantavirus by removing administrative offices to a modern building separated from the fort, rehabbing the back of the fort, providing upgraded visitor interpretive and educational services and opportunities. The project improves health and safety for employees and visitors, reduces operational costs, and improves visitor satisfaction and enjoyment.

Interpretive Trail and Shade Structure: The interpretive trail and shade structure projects were completed in 2009. The 1.75 mile trail provides pedestrian-only interpretive trail within the park offering opportunities for visitors to learn more about the area as home to Native Americans, traders and settlers along the historic route of the Santa Fe Trail. The visitor shelter is located adjacent to the restrooms at the visitor parking lot. It will provide protection from the elements to handicapped visitors waiting for shuttle service to the Fort, and provide introductory information to all visitors on six enamel coated interpretive panels.

Development of Fire Management Plan, 2002: The historic site's fire management plan was completed in August 2002. One of the primary actions prescribed by the plan is the reduction of hazardous fuels around the historic site's boundary. The plan calls for treatment of approximately 50 acres of historic site's lands each year.

Exotic Vegetation Management, Ongoing: The historic site's has been treating its exotic vegetation for the past three years. In fiscal year 2003, over 36 acres in the historic site were treated. Because success is achieved by treating the same areas for 4 to 5 years, future work would focus on maintaining the already treated areas and limiting the number of new areas treated.

Unacceptable Impacts

As described in *Purpose and Need*, the NPS must prevent any activities that would impair park resources and values. The impact threshold at which impairment occurs is not always readily apparent. Therefore, the Service would apply a standard that offers greater assurance that impairment would not occur. The Service would do this by avoiding impacts that it determines to be unacceptable. These are impacts that fall short of impairment, but are still not acceptable within a particular park's environment. Park managers must not allow uses that would cause unacceptable impacts; they must evaluate existing or proposed uses and determine whether the associated impacts on park resources and values are acceptable. Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. To determine if unacceptable impact could occur to the resources and values of the parks, the impacts of proposed actions in this environmental assessment were evaluated based on monitoring information, published research, and professional expertise, and compared to the guidance on unacceptable impacts provided in *Management Policies* 1.4.7.1 that defines unacceptable impacts as impacts that, individually or cumulatively, would:

- Be inconsistent with a park's purposes or values, or

- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- Create an unsafe or unhealthful environment for visitors or employees, or
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- Unreasonably interfere with:
 - o Park programs or activities, or
 - o An appropriate use, or
 - o The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.
 - o NPS concessioner or contractor operations or services.

By preventing unacceptable impacts, park managers also ensure that the proposed use of park resources would not conflict with the conservation of those resources. In this manner, the park managers ensure compliance with the Organic Act's separate mandate to conserve park resources and values. A determination on unacceptable impacts is made in the Conclusion section for each of the resource topics carried forward in this chapter and an overall determination is also made at the end of this chapter.

Impairment

Management Policies 2006 require analysis of potential effects to determine whether or not actions would impair park resources (NPS 2006). The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute impairment, but an impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;

- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in the *Conclusion* section for each of the resource topics carried forward in this chapter and an overall determination is also made at the end of this chapter.

VISITOR USE AND EXPERIENCE

Intensity Level Definitions

Bent's Old Fort was established to interpret the fort's 16-year history of trade along the Santa Fe Trail. The fort was instrumental in shaping the future of the west. The methodology used for assessing impacts to visitor use and experience is based on how prairie restoration would affect the visitor, particularly with regards to the visitors' enjoyment of the historic site's primary resource. The thresholds for this impact assessment are as follows:

- Negligible:** Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.
- Minor:** Changes in visitor use and/or experience would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
- Moderate:** Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative, and would likely be able to express an opinion about the changes.
- Major:** Changes in visitor use and/or experience would be readily apparent and have substantial long-term consequences. The visitor would be aware of the effects associated with the alternative, and would likely express a strong opinion about the changes.

Short-term impact – occurs only during the project construction

Long-term impact – continues after project construction

Impacts of Alternative A (No Action Alternative)

Under Alternative A, the area proposed for restoration would continue to be mowed and sprayed to control the noxious weedy species inhabiting the area (mainly Kochia) which is a short-term solution to a long-term problem. The presence of weedy species as well as the current management detracts from visitor interpretation of the surrounding cultural

landscape as well as diverts money from other managed areas in the park (through herbicide purchase and cost of mowing). Current management techniques associated with Alternative A promote the continued degradation of the surrounding cultural landscape and therefore continued impact to visitor use and experience as well as long-term management.

Cumulative Effects: Any construction activities have the potential to affect visitor use and experience. The construction of the Administrative Building likely had an effect on the visitor experience as a result of noise, and dust. Projects such as exotic vegetation management could have an adverse effect on visitor use and experience because of the inconvenience of possible off-limit areas. Ultimately, however, these actions have had a beneficial effect on visitor use and experience because of long-term improvements to the human health and safety aspects of BEOL; natural environment; interpretive opportunities; and functionality of the fort. Potential improvements to the cultural landscape would also have a beneficial effect on visitor use and experience. Under this alternative, although visitors may experience some delays from construction activities, visitor functions in the project area are not expected to change, and past actions have had beneficial impacts on visitor use and experience. Therefore, cumulatively, visitor use and experience would not appreciably change when considered with other past, present, and reasonably foreseeable future actions.

Conclusion: Impacts on visitation associated with the no action alternative are considered to be minor and long-term. This alternative would continue to have a minor, long-term, adverse effect on visitor experience due to un-restored condition of the prairie surrounding the Fort. Cumulatively, this alternative would have no effect on visitor use and experience when considered with other past, present, and reasonably foreseeable future actions.

Impacts of Alternative B (Preferred Alternative)

Implementation of Alternative B the preferred alternative would have a negligible adverse impact on visitor use and enjoyment on a short-term basis and only during the restoration activities. However, long-term management and visitor use and experience would be beneficially moderately impacted after the restoration was completed. Noises from equipment operation would interrupt the soundscape for a short period of time and the presence of equipment would affect interpretation of the cultural surroundings in the short-term. Long-term management would greatly be improved as a result of restoration because herbicide applications and mowing activities would decrease following restoration.

Cumulative Effects: As described under alternative A, any construction activities have the potential to affect visitor use and experience. Recent construction of the Administrative Building likely had an adverse effect on the visitor experience as a result of noise, and dust. Projects such as exotic vegetation management, and trail construction have had or could have an adverse effect on visitor use and experience because of the inconvenience of construction noise, dust, and possible off-limit areas. Ultimately, however, these actions would have or had a beneficial effect on visitor use and experience because of long-term improvements to the human health and safety aspects of the fort; the visual and natural environment; interpretive opportunities; and

functionality of the fort. Potential improvements to the cultural landscape would also have a beneficial effect on visitor use and experience. Considering these past, present, and reasonably foreseeable future actions, the beneficial effects of the proposed projects would have a cumulative benefit to the overall visitor use and experience at the fort.

Conclusion: Overall, cumulative impacts of restoration, added to the adverse effects associated with Alternative B, would result in short- and long-term, minimal and moderate, and direct impacts to visitation, and would generally be localized to areas around the fort. Visitation impacts associated with Alternative B are considered to be negligible or minimal adverse in the short-term; however, long-term effects of restoration could lead to better interpretation of the cultural landscape. Cumulatively, this alternative would have a minor beneficial effect to visitor use and experience because ultimately this project combined with other past, present, and reasonably foreseeable future actions would benefit a number of visitor resources.

Soils

Intensity Level Definitions

Implementation of this project could potentially impact soil resources. Available information on potential impacts from the alternatives is based on professional judgment and experience with similar projects. The threshold for the intensity of an impact on soils is defined as follows:

- Negligible:** An action that could result in a change in a geologic or soil feature or process, but change would be so small that it would not be of any measureable or perceptible consequence.
- Minor:** An action on the geology and soil would be detectable, but would be of a magnitude that would not have an appreciable adverse or beneficial effect on the biological process. The effect would be in a small area, but it would appreciably increase potential for erosion. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.
- Moderate:** The action would be readily apparent and would result in a noticeable change in a geologic feature or process; the change would be measureable and of consequence. The action would change the topsoil, overall productivity, or the potential for erosion. 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 change in a geological feature or process. Erosion potential would be high for large quantities of soil, top soil loss. Key ecological processes would be altered, and landscape level changes would be expected. Mitigation measures to offset adverse effects would be needed, could be expensive, and their success could not be guaranteed.

Short-term impact – occurs only during the project construction

Long-term impact – continues after project construction

Impacts of alternative A (No Action Alternative)

Long term moderate adverse effects to soils would continue to occur in the proposed project area. Under Alternative A, the area proposed for restoration would continue to be mowed and sprayed to control the noxious weedy species inhabiting the area (mainly Kochia) which is a short-term solution to a long-term problem. Current soil condition will not change and will continue to be impacted by previous soil compaction.

Cumulative Effects: There are several cumulative effects associated with the continuation of current management (Alternative A). Any restoration activities that require excavation or ground disturbance have the potential to affect soils. The actions listed in the cumulative scenario would have some effect on the soils of the historic site. The original re-construction of Bent's Old Fort resulted in moderate adverse impacts to the soil processes. Ongoing prairie restoration would have minor to moderate adverse effects to soils within the project area. Under this alternative, soils would continue to be compacted. Cumulative impacts on soils would remain moderate from past and current activities.

Conclusion: The No Action Alternative would have no new direct effect on the soils at Bent's Old Fort National Historic Site that have not already occurred. Natural and manmade soil processes still in motion would continue. Soil compaction would continue to effect the restoration of the prairie and treatment of non-native species would continue. Effects to soil resources would be long-term minor to moderate adverse impacts. Cumulatively, these effects would have a moderate impact on soils when considered with other past, present, and reasonably foreseeable future actions.

Impacts of Alternative B (Preferred Alternative)

Long term moderate adverse effects to soils would continue in the lower channel above the double historic culverts at the visitor center. The culverts have been in place within the channel for 75 years and have a long-term moderate adverse effect on the natural function of the channel. Until the historic culverts can be addressed function to pass the large debris flows in the watershed the channel would continue to need routine maintenance to remove sediment. Because there would be no major adverse or unacceptable impacts to geology or soils there would be no impairment of park resources or values.

Impact Analysis: Under Alternative B, soil compaction (a major component contributing to site degradation) would be alleviated through ripping and a suitable seedbed would be prepared. Soil resources would be beneficially impacted (moderate) directly through the soil ripping and seedbed preparation. Air and water quality and floodplains/wetlands may be negligible impacted directly as a result of soil ripping and seedbed preparation. There is the potential for dust contamination as bare soil is exposed and emissions from equipment use during soil preparation and seeding. Wetlands could be impacted through the erosion of sediment from the treated area. These short-term impacts are minimal and easily controlled through dust suppression, turning equipment off when not

in use and erosion control methods such as straw bales (or other erosion control methods) to protect water resources and wetlands.

Cumulative Effects: Restoration of the affected area would have several cumulative beneficial effects. The first being that ripping of the soil to alleviate compaction would facilitate the successful establishment of native species through increased and variable root penetration depths. Though short-term management costs are increased during restoration, long-term management costs are reduced following restoration which frees monies for other needs at the park.

The ripping of soil could impact air and water quality through dust and emissions and offsite transport of sediment from the site. Again, this is easily controlled through dust suppression, turning equipment off when not in use and erosion control. If dust and emissions affect the Class II air quality rating, restoration would cease until proper measures are taken to reduce impacts to air quality. If water quality is greatly impacted by the erosion of sediment off site, it is likely that wetlands and water quality of the Arkansas River would be impacted. Again, even though uncontrollable off site erosion is highly unlikely, restoration activities would cease until proper measures are taken to reduce the impacts to water quality.

Conclusion: Natural resource impacts associated with Alternative B are considered to be negligible or minimal adverse in the short-term; however, long-term effects of restoration would lead to better soil conditions and improve the cultural landscape. Cumulatively, these effects would have a moderate impact on soils when considered with other past, present, and reasonably foreseeable future actions.

Vegetation

Intensity Level Definitions

The predictions about short- and long-term impacts were based on professional judgment and experience with previous projects with similar vegetation. Impacts were assessed and discussed with local botanist and NPS biologists. The methodology used to assess potential changes to vegetation at the historic sites from the proposals is defined as follows:

- Negligible:** The impacts on vegetation (individuals or communities) would not be measureable. The abundance or distribution of individuals would not be affected or would be slightly affected. The effects would be on a small scale and no species of special concern would be affected. Ecological processes and biological productivity would not be affected.
- Minor:** The action would not have an appreciable adverse or beneficial effect within the project area's biological productivity. The alternative would not affect the viability of local or regional populations or communities. Mitigations to offset adverse effects, including measures to avoid species of concern, could be required and would be effective. Mitigations would be simple to implement and would likely succeed.

Moderate: The action would result in effects to some individual native plants and could also affect a sizeable segment of the species population. Permanent impacts could occur to native species of vegetation, but in a relatively small area. Some special status species could also be affected. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.

Major: The actions would have considerable effects on native plant populations, including special status species. The affect would occur over a large portion of the fort. Extensive mitigations measures to offset adverse effects would be required, could be expensive, and the success could not be guaranteed.

Short-term impact – occurs only during the project construction

Long-term impact – continues after project construction

Impacts of Alternative A (No Action Alternative)

The promotion of non-native species from 20th century agricultural relicts could result in further spread of noxious weeds into surrounding floodplains/wetlands. There would be no vegetation disturbed other than is naturally occurring from past man-made events. Long term negligible to minor adverse effect would continue. Under Alternative A, the area proposed for restoration would continue to be mowed and sprayed to control the noxious weedy species inhabiting the area (mainly Kochia) which is a short-term solution to a long-term problem. Alternative A also promotes the persistence of non-native plant species (moderate adverse impact) in the area proposed for restoration. Non-native species would continue to establish in the affected area because of the large percentage of bare ground (over 25%) that is susceptible to species invasion. It is common knowledge that the persistence and spread of weedy species threatens native ecosystems.

Cumulative Effects: Any construction activities that require excavation or ground disturbance would affect vegetation in the project area. The international border fence had a moderate long-term effect on vegetation. Similarly, proposed projects such as exotic plant removal, prairie restoration, have the potential to adversely impact vegetation. Under this alternative, vegetation would continue to be disturbed. Therefore, this project would not contribute to the effects on vegetation when considered with other past, present, and reasonably foreseeable future actions.

Conclusion: Natural resource impacts associated with Alternative A could have long-term effects by continued current actions which could lead to higher levels of impact to wetlands, surrounding prairie ecosystems as well as continued promotion of non-native species. Cumulatively, these effects would have a negligible to minor impact to vegetation when considered with other past, present, and reasonably foreseeable future actions.

Impacts of Alternative B (Preferred Alternative)

Under Alternative B, a suitable seedbed would be prepared. A native, diverse seed mix would be used to establish a plant community that blends with the surrounding landscape and is more resistant to drought and disease compared to current vegetation. The short-term impacts would be minimal and easily controlled through dust

suppression, turning equipment off when not in use and erosion control methods such as straw bales (or other erosion control methods) to protect water resources and wetlands. Short term adverse impacts would occur to vegetation until the native vegetation matures in the restoration area.

Cumulative Effects: As described under alternative A, any construction activities that require excavation or ground disturbance have the potential to affect vegetation. Past actions such as administrative building construction and prairie restoration have had a long-term minor adverse impact on vegetation resources at BEOL. Present and foreseeable actions, such as future exotic plant management could result in long term minor beneficial effects to vegetation. When considered with other past, present, and reasonably foreseeable future actions the effect of the no action alternative on vegetation would be long-term negligible to minor. Cumulatively, this would contribute a negligible to minor amount of disturbance to vegetation when considered with other past, present, and reasonably foreseeable future actions.

Conclusion: Alternative B would have short term negligible to minor adverse effect to vegetation in the short-term; however, long-term effects of restoration could lead to better interpretation of the cultural landscape and increased biological stability of the park. Cumulatively, these effects would have a moderate impact on vegetation when considered with other past, present, and reasonably foreseeable future actions.

CONSULTATION AND COORDINATION

Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from Bent's Old Fort National Historic Site and University of Wyoming. Interdisciplinary team members met October 10-11, 2007 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 the proposal site. The results of the October 2007 meeting are documented in this environmental assessment.

External Scoping

External scoping was conducted to inform the public about the proposal to restore 8-acres of prairie at Bent's Old Fort National Historic Site and to generate input on the preparation of this environmental assessment. This effort was initiated with the distribution of a scoping brochure, which was bulk-mailed to over 125 interested parties, volunteers, neighbors, and local government officials. All adjacent landowners on the historic site's mailing list database were included in the mailing. In addition, the scoping letter was sent to local news organizations, and it was posted on the historic site's internet website. With this press release, the public was given 30 days to comment on the project.

During the scoping period, approximately 9 responses were received from the public through letters. A respondent requested that the area not become restricted and the fort should continue to use the resources to explain the fort historical context. Other responses supported the restoration effort.

Agency Consultation

In accordance with the Endangered Species Act, the National Park Service contacted the U.S. Fish and Wildlife Service with regards to federally listed special status species, and in accordance with National Park Service policy, the historic site's also contacted the Colorado Division of Wildlife with regards to state-listed species. The results of these consultations are described in the *Special Status Species* section in the *Purpose and Need* chapter.

In accordance with Section 106 of the National Historic Preservation Act, the National Park Service provided the Colorado State Historic Preservation Officer an opportunity to comment on the effects of this project. The results of this consultation are described in the *Historic Structures* section in the *Environmental Consequences* chapter.

Native American Consultation

Seven Native American tribes were contacted at the beginning of this project to determine if there were any ethnographic resources in the project area and if they wanted to be involved in the environmental compliance process, including:

- Cheyenne & Arapaho Tribes of Oklahoma
- Comanche Nation of Oklahoma
- Kiowa Tribe of Oklahoma
- Northern Arapaho Tribe
- Northern Cheyenne Tribe

No response from the Native American tribes was received.

Environmental Assessment Review and List of Recipients

The environmental assessment would be released for public review in October 2009. To inform the public of the availability of the environmental assessment, the National Park Service would publish and distribute a letter or press release to various agencies, tribes, and members of the public on the park's mailing list, as well as place an ad in the local newspaper. Copies of the environmental assessment would be provided to interested individuals, upon request. Copies of the document would also be available for review at the historic site's visitor center and on the internet at <http://parkplanning.nps.gov/beol>.

The environmental assessment is subject to a 30-day public comment period. During this time, the public is encouraged to submit their written comments to the National Park Service address provided at the beginning of this document. Following the close of the comment period, all public comments would be reviewed and analyzed, prior to the release of a decision document. The National Park Service would issue responses to substantive comments received during the public comment period, and would make appropriate changes to the environmental assessment, as needed.

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APPENDIX:

VEGETATION SPECIES LIST FOR BEOL:

Family	Scientific Name	Common Name
Agavaceae	<i>Yucca glauca</i>	Yucca
Alismataceae	<i>Sagittaria cuneata</i>	Arrowhead
Amaranthaceae	<i>Amaranthus retroflexus</i>	Pigweed
Apiaceae	<i>Conium maculatum</i>	Poison Hemlock
	<i>Cymopterus acaulis</i>	Indian Beadroot
Apocynaceae	<i>Apocynum cannabinum</i>	Indian Hemp
Asclepiadaceae	<i>Asclepias engelmanniana</i>	Englemann's Milkweed
	<i>Asclepias latifolia</i>	Broadleaf Milkweed
	<i>Asclepias speciosa</i>	Milkweed
	<i>Asclepias subverticillata</i>	Whorled Milkweed
Asteraceae	<i>Ambrosia artemisiifolia</i>	Ragweed
	<i>Ambrosia psilostachya</i>	Rag Weed
	<i>Artemisia filifolia</i>	Sand Sage
	<i>Artemisia ludoviciana</i>	Sweet Sage
	<i>Aster ericoides</i>	Fall Aster
	<i>Baccharis salicina</i>	Groundsel Tree
	<i>Centaurea repends</i>	Russian Knapweed
	<i>Chrysothamnus nauseosus</i>	Rabbit Brush
	<i>Cirsium arvense</i>	Canada Thistle
	<i>Conyza canadensis</i>	Horseweed
	<i>Crepis runcinata</i>	Hawk's Beard
	<i>Dyssodia papposa</i>	Fetid Marigold
	<i>Erigeron bellidiastrum</i>	Western Fleabane
	<i>Gaillardia pulchella</i>	Blanketflower
	<i>Grindelia squarrosa</i>	Gumweed
	<i>Gutierrezia sarothrae</i>	Snakeweed
	<i>Helianthus annuus</i>	Common Sunflower
	<i>Helianthus petiolaris</i>	Prairie Sunflower
	<i>Hymenoxys odorata</i>	Bitterweed
	<i>Iva axillaris</i>	Poverty weed
	<i>Lactuca oblongifolia</i>	Lactuca (wild lettuce)
	<i>Lactuca serriola</i>	Prickley Lettuce
	<i>Lygodesmia juncea</i>	Skeleton Weed
	<i>Machaeranthera canescens</i>	Purple and Yellow Aster
	<i>Ratibida columnifera</i>	Prairie Coneflower
	<i>Ratibida tagetes</i>	Coneflower
<i>Solidago canadensis</i>	Goldenrod	
<i>Tragopogon dubius</i>	Oyster Plant	

Family	Scientific Name	Common Name
	<i>Virgulus falcatus</i>	White Prairie Aster
<i>Boraginaceae</i>	<i>Cryptantha crassisejala</i>	Thicksepal Cryptantha
	<i>Lappula redowski</i>	Sticktight
<i>Brassicaceae</i>	<i>Capsella bursa-pastoris</i>	Shepard's Purse
	<i>Cardaria draba</i>	Hoary Cress
	<i>Chorispora tenella</i>	Purple/Blue Mustard
	<i>Descurainia sophia</i>	Yellow Mustard
	<i>Lepidium latifolium</i>	White Top
	<i>Rorippa sinuata</i>	Yellow Cress
	<i>Thlaspi arvense</i>	Penny Cress
<i>Cactaceae</i>	<i>Opuntia polyacantha</i>	Prickly Pear
<i>Capparaceae</i>	<i>Cleome serrulata</i>	Rocky Mountain Bee Plant
<i>Caprifoliaceae</i>	<i>Symphoricarpos</i>	Snowberry
<i>Chenopodiaceae</i>	<i>Atriplex canescens</i>	Four Wing Salt Bush
	<i>Bassia scoparia</i>	Kochia
	<i>Chenopodium berlandieri</i>	Lamb's Quarters
	<i>Krascheninnikovia lanata</i>	Winter Fat
	<i>Salsola iberica</i>	Russian Thistle
	<i>Sarcobatus vermiculatus</i>	Black Greasewood
<i>Commelinaceae</i>	<i>Tradescantia occidentalis</i>	Prairie Spiderword
<i>Convolvulaceae</i>	<i>Concolculus arvensis</i>	Bindweed
	<i>Iponoea leptophylla</i>	Bush Morning Glory
<i>Curcubitaceae</i>	<i>Cucurbita foetidissima</i>	Buffalo Gourd
<i>Cyperaceae</i>	<i>Carex lasiocarpa</i>	American Woollyfruit Sedge
	<i>Carex praegracilis</i>	Clustered Field Sedge
	<i>Eleocharis palustris</i>	Spike Rush
	<i>Schoenoplectus lacustris</i>	Lakeshore Bulrush
	<i>Scirpus paludosus</i>	Alkali Bulrush
<i>Dipsacaceae</i>	<i>Dipsacus fullonum</i>	Teasel
<i>Euphorbiaceae</i>	<i>Euphorbia marginata</i>	Snow on the Mountain
	<i>Euphorbia prostrata</i>	Ground Spurge
<i>Fabaceae</i>	<i>Amorpha canescens</i>	Lead Plant
	<i>Astragalus bisulcatus</i>	Loco Weed
	<i>Dalea candida</i>	White Prairie Clover
	<i>Gleditsia triacanthos</i>	Honey Locust
	<i>Glycyrrhiza lepidota</i>	Wile Licorice
	<i>Lupine pusillus</i>	Lupine
	<i>Melilotus officinalis</i>	Yellow Sweet Clover
	<i>Psoralea tenuiflora</i>	Alfalfa
<i>Lamiaceae</i>	<i>Leonurus cardiaca</i>	Motherwort
	<i>Mentha arvensis</i>	Field Mint
	<i>Stachys palustris</i>	Hedge Nettle

Family	Scientific Name	Common Name
<i>Lemnaceae</i>	<i>Lemna minor</i>	Duckweed
<i>Liliaceae</i>	<i>Asparagus officinalis</i>	Wild Asparagus
<i>Loasaceae</i>	<i>Mentzelia nuda</i>	Sand Lily
<i>Malvaceae</i>	<i>Abutilon theophrasti</i>	Velvet Leaf
	<i>Callirhoe involucrata</i>	Purple Poppy Mallow
	<i>Hibiscus trionum</i>	Flower of the Hour
	<i>Sphaeralcea coccinea</i>	Copper Mallow
<i>Nyctaginaceae</i>	<i>Abronia fragrans</i>	Sand Puffs
	<i>Mirabilis linearis</i>	Wild Four O'Clock
	<i>Mirabilis nyctaginea</i>	Heart Leaf Four O'Clock
	<i>Tripterocalyx micranthus</i>	Sand Verbena
<i>Onagraceae</i>	<i>Gaura coccinea</i>	Scarlet Gaura
	<i>Gaura mollis</i>	Small Flower Gaura
	<i>Oenothera albicaulis</i>	White Evening Primrose
	<i>Oenothera latifolia</i>	Evening Primrose
<i>Pedaliaceae</i>	<i>Proboscidea louisianica</i>	Devil's Claw
<i>Plantaginaceae</i>	<i>Plantago patagonica</i>	Woolly Plantain
<i>Poaceae</i>	<i>Aegilops cylindrica</i>	Goat Grass
	<i>Agropyron smithii</i>	Western Wheatgrass
	<i>Aristida longiseta</i>	Hairgrass, Redtop
	<i>Bothriochloa laguroides</i>	Silver Beard Grass
	<i>Bouteloua curtipendula</i>	Side Oats Gramma
	<i>Bouteloua gracilis</i>	Blue Gramma
	<i>Bromus inermis</i>	Smooth Brome
	<i>Bromus tectorum</i>	Downy Brome (Cheat)
	<i>Buchloe dactyloides</i>	Buffalo Grass
	<i>Cenchrus longispinus</i>	Sand Bur
	<i>Chloris verticillata</i>	Windmill Grass
	<i>Cynodon dactylon</i>	Bermuda
	<i>Dactylis glomerata</i>	Orchard Grass
	<i>Distichlis spicata</i>	Salt Grass
	<i>Echinochloa crus-galli</i>	Barnyard Grass
	<i>Elymus canadensis</i>	Canada Wildrye
	<i>Elymus elymoides</i>	Squirrel Tail Bottle Brush
	<i>Hesperostipa comata</i>	Needle and Thread Grass
	<i>Hilaria jamesii</i>	Galleta
	<i>Hordeum jubatum</i>	Foxtail
	<i>Muhlenbergia asperifolia</i>	Muhly
	<i>Muhlenbergia racemosa</i>	Mutton Grass
	<i>Oryzopsis hymenoides</i>	Indian Ricegrass
<i>Panicum capillare</i>	Witch Grass	
<i>Panicum obtusum</i>	Vine Mesquite	

Family	Scientific Name	Common Name
<i>Poaceae</i>	<i>Panicum virgatum</i>	Switch Grass
	<i>Phalaris arundinacea</i>	Reed Canary Grass
	<i>Phragmites australis</i>	River Cane
	<i>Poa fendleriana</i>	Blue Grass
	<i>Polypogon monspeliensis</i>	Rabbit's Foot Grass
	<i>Schedonnardus paniculatus</i>	Tumble Grass
	<i>Schizachyrium scoparium</i>	Little Bluestem
	<i>Setaria viridis</i>	Foxtail
	<i>Sorghum halepense</i>	Johnson Grass
	<i>Spartina pectinata</i>	Cord Grass
	<i>Sporobolus airoides</i>	Alkalie Sacaton
	<i>Sporobolus cryptandrus</i>	Sand Dropseed
	<i>Polemoniaceae</i>	<i>Ipomopsis longiflora</i>
<i>Linanthus caespitosus</i>		Prickley Gilia
<i>Polygonaceae</i>	<i>Polygonum aviculare</i>	Devil's Shoestring
	<i>Polygonum ramosissimum</i>	Smartweed
	<i>Rumex crispus</i>	Curly Dock
	<i>Rumex obtusifolius</i>	Bitter Dock
	<i>Rumex venosus</i>	Veiny Dock
<i>Portulacaceae</i>	<i>Portulaca oleracea</i>	Purslane
<i>Potamogetonaceae</i>	<i>Potamogeton foliosus</i>	Pondweed
<i>Ranunculaceae</i>	<i>Clematis ligusticifolia</i>	Virgins Bower
	<i>Delphinium virescens</i>	Plains Larkspur
	<i>Ranunculus gmelinii</i>	Water Crowfoot
<i>Rosaceae</i>	<i>Rosa woodsii</i>	Wild Rose
<i>Salicaceae</i>	<i>Populus alba</i>	Maple Leaf Cottonwood
	<i>Populus deltoides</i>	Cottonwood
	<i>Salix amygdaloides</i>	Peach Leaved Willow
	<i>Salix exigua</i>	Sandbar Willow
<i>Scrophulariaceae</i>	<i>Scrophularia lanceolata</i>	Laneleaf Figwort
	<i>Verbascum thapsus</i>	Mullein
	<i>Veronica anagallis-aquatica</i>	Speedwell
<i>Simaroubaceae</i>	<i>Ailanthus altissima</i>	Tree of Heaven
<i>Solanaceae</i>	<i>Chamaesaracha coniodes</i>	Gray Five Eyes
	<i>Physalis hederifolia</i>	Chinese Lantern
	<i>Physalis lobata</i>	Purple Ground-Cherry
	<i>Solanum elaeagnifolium</i>	Silver-Leaf Nightshade
	<i>Solanum rostratum</i>	Buffalo Burr
<i>Tamaricaceae</i>	<i>Tamarix ramosissima</i>	Tamarisk
<i>Typhaceae</i>	<i>Typha angustifolia</i>	Cattail
	<i>Typha latifolia</i>	Broadleaf Cattail
<i>Ulmaceae</i>	<i>Ulmus pumila</i>	Chinese Elm

Family	Scientific Name	Common Name
<i>Verbenaceae</i>	<i>Lippia cuneifolia</i>	Frog Fruit
<i>Vitaceae</i>	<i>Parthenocissus inserta</i>	Virginia Creeper
<i>Zygophyllaceae</i>	<i>Kallstroemia parviflora</i>	Warty Caltrop
	<i>Tribulus terrestris</i>	Puncture Vine

BREEDING BIRD, MAMMAL, REPTILE, AMPHIBIAN, AND FISH SPECIES DOCUMENTED AT BEOL (CSU, 2002):

Type	Scientific Name	Common Name
Breeding Bird Species	<i>Ardea herodias</i>	Great Blue Heron
	<i>Butorides virescens</i>	Green Heron
	<i>Cathartes aura</i>	Turkey Vulture
	<i>Anas platyrhynchos</i>	Mallard
	<i>Circus cyaneus</i>	Northern Harrier
	<i>Buteo swainsoni</i>	Swainson's Hawk
	<i>Buteo jamaicensis</i>	Red-tailed Hawk
	<i>Buteo regalis</i>	Ferruginous Hawk
	<i>Falco sparverius</i>	American Kestrel
	<i>Phasianus colchicus</i>	Ring-necked Pheasant
	<i>Meleagris gallopavo</i>	Wild Turkey
	<i>Colinus virginianus</i>	Northern Bobwhite
	<i>Charadrius vociferuc</i>	Killdeer
	<i>Actitis macularia</i>	Spotted Sandpiper
	<i>Columba livia</i>	Rock Dove
	<i>Zenaida macroura</i>	Mourning Dove
	<i>Coccyzus americanus</i>	Yellow-billed Cuckoo
	<i>Bubo virginianus</i>	Great Horned Owl
	<i>Chordeiles minor</i>	Common Nighthawk
	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker
	<i>Picoides pubescens</i>	Downy Woodpecker
	<i>Colaptes auratus</i>	Red-shafted (Northern) Flicker
	<i>Contopus sordidulus</i>	Western Wood-pewee
	<i>Myiarchus cinerascens</i>	Ash-throated Flycatcher
	<i>Tyrannus vociferans</i>	Cassin's Kingbird
	<i>Tyrannus verticalis</i>	Western Kingbird
	<i>Tyrannus tyrannus</i>	Eastern Kingbird
	<i>Lanius ludovicianus</i>	Loggerhead Shrike
	<i>Cyanocitta cristata</i>	Blue Jay
	<i>Pica pica</i>	Black-billed Magpie
	<i>Corvus brachyrhynchos</i>	American Crow
	<i>Hirundo rustica</i>	Barn Swallow
	<i>Troglodytes aedon</i>	House Wren
	<i>Sialia sialis</i>	Eastern Bluebird
	<i>Turdus migratorius</i>	American Robin
	<i>Toxostoma rufum</i>	Brown Thrasher

Type	Scientific Name	Common Name
Breeding Bird Species	<i>Sturnus vulgaris</i>	European Starling
	<i>Simophila cassinii</i>	Cassin's Sparrow
	<i>Spizella passerina</i>	Chipping Sparrow
	<i>Chondestes grammacus</i>	Lark Sparrow
	<i>Ammodramus savannarum</i>	Grasshopper Sparrow
	<i>Buiraca caerulea</i>	Blue Grosbeak
	<i>Spiza americana</i>	Dickcissel
	<i>Agelaius phoeniceus</i>	Red-winged Blackbird
	<i>Sturnella neglecta</i>	Western Meadowlark
	<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird
	<i>Quiscalus quiscula</i>	Common Grackle
	<i>Molothrus ater</i>	Brown-headed Cowbird
	<i>Icterus bullockii</i>	Bullock's Oriole
	<i>Carduelis tristis</i>	American Goldfinch
<i>Passer domesticus</i>	House Sparrow	
Mammal Species	<i>Notiosorex crawfordi</i>	Desert Shrew
	<i>Sylvilagus audubonii</i>	Desert Cottontail
	<i>Lepus californicus</i>	Black-tailed Jackrabbit
	<i>Spermophilus spilosoma</i>	Spotted Ground Squirrel
	<i>Cynomys ludovicianus</i>	Black-tailed Prairie Dog
	<i>Sciurus niger</i>	Fox Squirrel
	<i>Chaetodipus hispidus</i>	Hispid Pocket Mouse
	<i>Dipodomys ordii</i>	Ord's Kangaroo Rat
	<i>Castor canadensis</i>	American Beaver
	<i>Reithrodontomys megalotis</i>	Western Harvest Mouse
	<i>Peromyscus maniculatus</i>	Deer Mouse
	<i>Peromyscus leucopus</i>	White-footed Mouse
	<i>Onychomys leucogaster</i>	Northern Grasshopper Mouse
	<i>Sigmodon hispidus</i>	Hispid Cotton Rat
	<i>Neotoma albigula</i>	White-throated Woodrat
	<i>Ondatra zibethicus</i>	Common Muskrat
	<i>Canis latrans</i>	Coyote
	<i>Procyon lotor</i>	Raccoon
	<i>Odocoileus hemionus</i>	Mule Deer
<i>Odocoileus virginianus</i>	White-tailed Deer	
Amphibian and Reptile Species	<i>Bufo woodhousii</i>	Woodhouse's Toad
	<i>Rana blairi</i>	Plains Leopard Frog
	<i>Fana catesbeiana</i>	Bullfrog

Type	Scientific Name	Common Name
Amphibian and Reptile Species	<i>Apalone spinifera</i>	Spiny Softshell Turtle
	<i>Phrynosoma cornutum</i>	Texas Horned Lizard
	<i>Cnemidophorus sexlineatus</i>	Six-lined Racerunner
	<i>Eumeces obsoletus</i>	Great Plains Skink
	<i>Pituophis catenifer</i>	Bullsnake
	<i>Thamnophis radix</i>	Plains Garter Snake
	<i>Crotalus viridis</i>	Western Rattlesnake
Fish Species	<i>Cyprinus carpio</i>	Common Carp
	<i>Fendulus zebrinus</i>	Plains Killifish
	<i>Gambusia affinis</i>	Mosquitofish
	<i>Lepomis cyanellus</i>	Green Sunfish
	<i>Notropis stramineus</i>	Sand shiner
	<i>Notropis lutrensis</i>	Red shiner
	<i>Ameiurus sp.</i>	Bullhead catfish
	<i>Ictalurus punctatus</i>	Channel catfish
	<i>Pimephales promelas</i>	Fathead minnow
	<i>Lepomis macrochirus</i>	Bluegill
	<i>Phenacobius mirabilis</i>	Suckermouth minnow
	<i>Hybopsis gracilis</i>	Flathead chub

PHOTOGRAPHS:



Aerial view of NPS excavations prior to reconstruction of the fort under the direction of Jackson Moore, November 1964.



View of vegetation change to kochia from fort look out.



Restoration area in relation to fort.

INFORMATIVE PAMPHLET FOR RESTORATION

 **Bent's Old Fort NHS
Prairie Restoration**

 **What is Restoration?**

Why is this area being Restored? 

Impacts of Restoration? 

Who can I Contact with Questions? 

Restoration is:

- (1) repairing damage caused by humans. In this case, we're restoring areas impacted during fort reconstruction in 1976 to how it might have looked when this fort was occupied by William Bent and others.
- (2) the reestablishment, to the extent possible, of the structure, function, and integrity of the ecosystem and the sustaining habitats they provide. We want to restore an ecosystem that can take care of itself and be resistant to weeds!

This Restoration will:

- (1) get rid of soil compaction from fort reconstruction in 1976 to help native plant communities develop and persist.
- (2) reduce visual impacts from 20th century agricultural activities for a better visitor experience. We want you to see how the surrounding landscape looked in the mid 1800's.
- (3) eliminate exotic species as a seed source in the immediate area. This will help keep weeds from invading our short grass prairie and wetlands.
- (4) reduce maintenance costs in the long term. This way we can work on maintaining other areas of the park.

Impacts of Restoration:

Air quality: Don't worry, we'll control the dust and emissions if necessary to keep our air clean.

Soundscapes: It might be noisy while the machinery prepares a seedbed, but this is only temporary.

Water quality: We'll control soil erosion during construction to keep our water clean.

Soils: It may look like we're disturbing soils, but we're really making a better seedbed for our native plant species.

Wetlands: Surrounding wetlands won't be impacted by this restoration project because we'll be controlling for erosion.

Visitor experience: Sorry the restoration was occurring when you visited. Future visitors will see a cultural landscape more like it was when William Bent was here!

Long-term management: We'll be able to reduce our mowing and herbicide applications because of this restoration.

Questions:
Ask any of our interpretive staff about our exciting restoration or call our main office 719-383-5010.

Informative pamphlet that could be provided to visitors during the restoration project.