CHAPTER 3
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section describes existing social, economic and environmental conditions in the vicinity of Pompeys Pillar in Yellowstone County. The intent of the Affected Environment and Environmental Consequences chapter is to provide baseline information on the existing conditions of the study area and to assess impacts associated with the proposed improvements to the site. This section incorporates by reference the 1996 Pompeys Pillar EA analysis. Only those issues that are pertinent to the proposed action are addressed in this analysis.

GENERAL INFORMATION

Land Ownership and Adjacent Lands and Uses

The current surface acreage for the entire site is 431 acres, which includes an adjacent 107-acre island under BLM administration.

The private lands that adjoin the western and eastern boundaries of Pompeys Pillar are agricultural and are currently being farmed. The private lands directly across the river to the north are also agricultural and are used for livestock grazing. Legal access to Pompeys Pillar is from Highway 312 and the Yellowstone River. A small private in-holding is located within the Pompeys Pillar boundary.

Rights-of-Way and Easements

A right-of-way for Highway 312 is located along the southern boundary of the property. Easements for a gas pipeline and electric transmission lines are also within this highway corridor. There is also an easement for several irrigation ditches.

Climate

Climate of the Pompeys Pillar and the middle Yellowstone River valley area is typical of a cool, continental, semi-arid environment. Summers are warm with temperatures sometimes exceeding 100 degrees, July high temperatures average in the low 80's, while January highs are in the teens. Winters are cold with temperatures sometimes dropping to 40 degrees below zero. Annual precipitation averages 10-14 inches with 60 percent of the growing season moisture coming during May and June. Hail, severe thunder storms and blizzards often occur and sometimes damage property or threaten life.

Geology

Pompeys Pillar is an isolated sandstone formation on the south side of the river bank of the Yellowstone River. The pillar land form rises abruptly more than 100 feet above the surrounding level plain. The materials forming the Pillar, as well as the rugged cliffs on the north side of the river, correspond to the Hell Creek formation.

ASSUMPTIONS

Cost Estimates

Construction and operational costs have been estimated for each alternative to help the reader understand the scope of development. These costs are projections based on the best available information at this stage of the proposals. Actual costs may slightly increase or decrease, but will stay within the level of funding available for the project. A standard range of 8 to 10 percent of total construction costs was used as a basis to estimate the operations and maintenance costs. Actual operations and maintenance costs may in some cases be lower than estimated.

Current operations and maintenance costs for the existing facility in FY 2001 were about $280,000. Under Alternative A, construction costs for an 11,000 -12,500 square foot building and associated facilities would be about $9.4 million, and the estimated operational costs (based on an average of 8 to10 percent of construction costs) would be about $750,000 to $940,000 per year. Under Alternative B, the estimated construction costs for a 5,700 square foot facility would be about $4 million, with the potential for phased-in improvements (i.e., new entrance road and parking area, exhibits, exterior finishes, potential building expansion, etc.) not to exceed $9.4 million. Estimated operational costs would be $320,000 to $940,000, based on the level of phases completed.

Visitation Projections

Visitation projections for Pompeys Pillar were estimated to be 250,000 visitors in the 1996 Pompeys Pillar EA/Amendment. More recent research and study was conducted to provide a more realistic range of about 130,000 visitors by year 2020. This projection is supported by two studies (Staszak, 2001; BRW, 2001). The more recent visitor estimates are used in this analysis.

Traffic Safety

Current annual traffic levels, based on a visitation level of about 50,000, are estimated to be 17,000 vehicles. A traffic study was initiated as part of the original schematics for a moderate-sized building (11,000-12,500 square feet) with visitation projections of about 250,000 visitors per year. This translated into an estimated 83,000 vehicles per year. That study indicated a need to implement some traffic safety controls such as a de-acceleration lane. With the new data on the anticipated visitation levels (130,000 a year by 2020) and a smaller facility, a revised traffic study may need to be completed to determine what modifications, if any, would be required to ensure traffic safety. It is estimated that about 43,000 vehicles would enter the site per year at the full visitation level of 130,000, which is a 52 percent decrease in vehicular traffic from Alternative A. It is possible that a de-acceleration lane may not be required. The traffic study would be done in coordination with the Montana Department of Transportation as part of the entry permit process for the access road. Any traffic safety controls, specific road entrance location recommendations and other requirements will be studied at that time.

IMPACTS COMMON

Cultural, Paleontological and Historical Resources

Affected Environment - Pompeys Pillar is composed of materials laid down as marine and terrestrial deposits during the upper Cretaceous period. The Cretaceous period was the Age of Dinosaurs, and has yielded a fossil record that is noted worldwide. Although no animal or plant fossils have yet been documented on or within the deposits making up Pompeys Pillar, significant fossils have been found in similar sandstone beds nearby.

In 1965, Pompeys Pillar was designated a National Historic Landmark under the Historic Sites Act of 1935. In 1983, the Pillar was listed on the National Register of Historic Places as a significant cultural property. On January 17, 2001, a total of 51 acres including the Pillar and the cottonwood gallery was established as a National Monument.

Pompeys Pillar is well within territory historically acknowledged as the homeland of the Apsaalooke, or Crow people. The Pillar's name in the Crow language, Iishbiiammaache, is variously translated as "Where the Mountain Lion Lies", "The Mountain Lion's Lodge", or "Where the Mountain Lion Preys." The Pillar is referred to in Crow oral history.

The strategic setting of Pompeys Pillar at an important ford of the Yellowstone, and its remarkable appearance virtually guaranteed its place as a landmark for the native people of the Northern Plains through the region's more than 11,000 years of occupation. The Pillar was used for centuries as a favored campsite by the Crows and other groups as they traveled through the area on hunting, trading, war or other expeditions. Ethnographic and archeological evidence suggest that the Pillar was also a place of ritual and religious activity.

The earliest Euro-American explorers to visit Pompeys Pillar are unknown. Some of the well-documented accounts of explorers in the area include a French-Canadian trader named Menard. He passed through this portion of the Yellowstone Valley in the last decade of the eighteenth century with a Crow and Hidatsa war expedition that captured Sacagawea and other Shoshone children from the Rocky Mountains. William Clark of the Lewis and Clark Expedition was the first United States military expedition to explore the unrecorded territories of the upper Missouri River basin and the Columbia River basin. Clark arrived at the Pillar on July 25, 1806, and inscribed his name and date in the soft sandstone and recorded doing so in his journal. Clark named the sandstone outcropping "Pompey's Tower" in honor of Jean Baptiste Charbonneau, the son of Sacagawea and the guide Toussaint Charbonneau. "Pompy" or "little Pomp" was Clark's pet name for the child, and is taken from a Shoshone word for "chief." After the L&C Expedition, there were many accounts of fur traders, military and railroad personnel, as well as other visitors to the rock.

Numerous historic markings and other etchings can still be found on the Pillar. Without protection, ongoing weathering of the sandstone surfaces of the Pillar will result in the eventual loss of all the rock art and inscriptions, except the Clark signature with its protective glass covering. In addition to the natural deterioration of the rock's surfaces, several relatively minor incidents of vandalism have occurred since the BLM acquired the property. Currently, features are monitored and protected by several systems, including a camera and alarm system to monitor Clark's signature.

The property includes two extensive land forms which could harbor archaeological and historical remains. The first of these is the lower terrace lying north and east of the Pillar. This land form has not been cultivated and is pres-

ently covered with a dense cottonwood riparian woodland. Based on the 1806 Clark manuscript map, and on nineteenth century photographs and survey plats, the lower terrace is believed to have accumulated since the beginning of the twentieth century. Its formation may be the result of adjustment of the Yellowstone River to the effects of the Huntley Irrigation Project and other large upstream irrigation systems. The potential for archaeological deposits on or within this land form is limited to early twentieth century remains. Because the lower terrace is within the floodway, an area regularly subjected to relatively high velocity stream flow, substantial intact archaeological remains of any kind are unlikely. Construction or other activities would be unlikely to adversely and directly affect historic properties, although any modifications to this terrace would have to be considered in relation to their effect on the setting and feeling qualities of the monument.

A second major land form is the higher terrace east and south of Pompeys Pillar. The greater part of this land form has been under cultivation for between 50 and 100 years. Considerable surface inventory and subsurface testing have already been conducted on the upper terrace. The results of this work indicate that disturbance to sites in cultivated portions of the property has already reached a maximum. Further significant displacement horizontally or vertically is unlikely unless the fields are subjected to deeper plowing. Important archaeological information may be retrievable from artifacts and debris scattered within the plow zone, even in their disturbed state. Diagnostic artifacts such as projectile points, or concentrations of materials that can be related to a single component or occupation, such as household debris from a particular homestead occupation, may be identifiable. For the most part these plow zone materials have been mapped in place and collected. As additional materials appear, they will be plotted and collected as well. Change to a less disruptive land use, such as permanent planting to native vegetation would not adversely affect cultural resources in areas formerly cultivated.

Exceptions to this situation exist where cultural deposits are present below the plow zone. Testing in 1999 in the vicinity of the proposed interpretive center location identified one such subsurface pocket with intact prehistoric archaeological remains. Other substantial pockets of intact materials were not discovered elsewhere in the vicinity, despite considerable testing effort. Intact materials could be present in areas that have escaped cultivation, such as along fence lines, irrigation ditches, or near other modern features. Testing has not yet been undertaken in areas near the highway. Subsurface materials could exist here below the plow zone or in uncultivated areas. Any materials discovered would have to be treated so that no adverse effect is sustained, probably through avoidance, but possibly through data recovery.

The system of irrigation laterals and drains on the property are a part of the Huntley Irrigation Project. Portions of the Huntley Irrigation system are eligible for listing on the NRHP. As additional components are recorded, including those on the property, they will be evaluated in the context of the system. Prior to any disturbance of irrigation features, the irrigation system on the property would be recorded and evaluated. For those features which would be adversely affected by a proposed action, and which are found to be eligible individually or as contributing elements of an eligible cultural property, an appropriate plan to mitigate the effects of the actions would be formulated and implemented in consultation with the Bureau of Reclamation and the SHPO. Prior to any disturbance of these features, legal questions regarding modification of this functioning irrigation system would have to be answered.

Recent archeological testing was initiated in the area of the proposed facilities. The testing resulted in finding intact prehistoric deposits. This site has been marked and will be avoided during construction. Interpretive and educational opportunities exist for this site and other archeological and historical remains on the property. Additional studies have been undertaken in an effort to capture and record the other historic signatures and rock art.

Impacts Common - During surface disturbing activities, any subsequently discovered archaeological resources which are considered eligible for the National Register of Historic Places (NRHP) would either be avoided or, in consultation with Montana State Historic Preservation Officer (SHPO), a plan for mitigating the effects of the proposed actions would be formulated and implemented

Native American Religious Concerns

Ethnographic and archaeological evidence suggest that the Pillar was a place of ritual and religious activity. However, it is not anticipated that any of the alternatives would interfere with the inherent right or freedom to believe, express, and exercise traditional religions, including access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rites as established in the American Indian Religious Freedom Act of 1978 and Executive Order 13007, Indian Sacred Sites.

Consultation with the Crow and Northern Cheyenne Tribes has been ongoing since the inception of this project. Most recently, the BLM consulted with the Crow Tribe in January and May 2001.

Environmental Justice

Federal agencies are required to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low income populations (Executive Order 12898). During the course of this analysis, the BLM considered all public input from persons or groups regardless of age, race, income, or other social/economic characteristics.

The population composition of the counties surrounding the Pillar indicate that minority and low-income populations are present. The highest proportions of minorities and low income people occur south of the Pillar in Rosebud and Big Horn Counties where the Crow and Northern Cheyenne Reservations are located. Consultation has been completed several times with the Tribes; consultation most recently occurred in May 2001.

A review of this analysis indicates no disproportionately high and adverse effects on minority or low income populations. None of these alternatives would result in changes in these demographics or affect the poverty status of these people. Environmental justice is not an issue for this EA .

Vegetation (including non-native and invasive species)

Affected Environment - Unfarmed areas are dominated by cottonwood, willow, Russian olive (a non-native species) and buffaloberry. Noxious weeds including spotted and russian knapweed, houndstongue, leafy spurge and Canada thistle, as well as other weed species such as common burdock, poison ivy and stinging nettle occur or may occur at Pompeys Pillar. The effects of biological control agents on field bindweed, leafy spurge, Canada thistle, and Russian knapweed are being studied through a research project initiated in 1992. These studies are ongoing. Integrated weed management with biological and chemical control has been used and will continue to control and prevent the spread of weeds.

Refer to the wetlands/riparian analysis for more detailed discussion wetland/riparian vegetation.

Impacts Common - The periodic removal of dead and dying limbs and trees to ensure public safety would slightly lessen the natural appearance of the wooded areas.

Soils (including Prime and Unique Farmland) and Topography

Affected Environment - Soils located at the Pompeys Pillar area have developed from alluvium typical of the Yellowstone Valley floodplain. Silty clay loam textured soils dominate and are distributed as irregular soil patterns common to alluvial river floodplains. Soil capability classes indicate the suitability of the soils for most crops and range from I to VIII, with I having the fewest limitations that restrict their use. At Pompeys Pillar, the soil capability classes range from II to IV with approximately one third of the 200 acres currently being farmed in Class IV. Class IV soils are marginal for use as cropland, having salts, clayey textures or other problems requiring a high degree of management skill for long-term economic production. Class IV in this area are not as productive as Class II or III soils. Typically irrigated crops grown in the immediate area are sugar beets, corn, alfalfa hay, and cereal grains such as barley, wheat and oats. Although the soils and farming techniques at the Pillar are typical for the Yellowstone Valley, the soil types at the Pompeys Pillar area do not meet the national classification requirements for Prime and Unique Farmland.

The farmed and irrigated soils are relatively level with 0-2 percent slopes. The area immediately north and east of the proposed interpretive center is the most prone to flooding. The floodplain study that was conducted determined this area to be the floodway. A portion of this area, immediately north or northwest of the center, would be used as a day-use area.

Impacts Common - There are no change in impacts from the 1996 Environmental Assessment, with the exception of updated soils information that does not support the designation of the area having prime farmland soils. About 50 acres of farmland are being considered for conversion to short-grass prairie vegetation. Impacts of changing land use on this very small acreage would be insignificant, compared to the total acreage of farmland currently under cultivation in the Yellowstone Valley or the region.

Livestock Grazing

Affected environment - Prior to acquisition, the 366-acre parcel was grazed by domestic livestock, which was typical of local grazing practices to utilize crop residue. Since acquisition, livestock grazing has not been authorized. The adjacent 107-acre island is a tract of public land without an established grazing preference lease. However, grazing by selected type and age class of domestic animals would be considered as a management tool and could be authorized to improve vegetation health, control weeds, reduce fire danger from excess growth, or wildlife habitat management.

Impacts Common - There would be no loss of grazing preference as none has ever been established. Wildlife, particularly migrating geese and ducks, and local pheasants

would benefit by having an additional, however small, food source.

Air Quality

Affected Environment - Through the Clean Air Act Amendments of 1977, Congress established a system for the Prevention of Significant Deterioration (PSD) of "attainment" and "unclassified" areas. Pompeys Pillar has a PSD Class II air quality designation which allows moderate and controlled growth. ACEC guidance indicates that management activities would be conducted in a manner that would preserve the Montana Class II air quality designation for Yellowstone County.

Impacts Common - Any decisions or actions identified in this plan would also comply with air quality legislation, including the Clean Air Act. Activities associated with the construction of the interpretive center and related infrastructure would temporarily increase dust and exhaust, but would not exceed the PSD Class II air quality.

Area of Critical Environmental Concern (ACEC)

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that the BLM give priority to the designation and protection of ACECs. Pompeys Pillar area was found to possess the relevance and importance criteria necessary for ACEC designation and was designated an ACEC in 1996, primarily for historic and cultural values. Fish and wildlife resources and status as a natural system or process were additional relevance components of the designation. The ACEC sets forth management prescriptions for the site, which included the designation of management zones (refer to Chapter Two). An interpretive center would allow for more interpretation and education about the site. All actions are consitent with the ACEC prescription.

Wastes, Hazardous or Solid

The Resource Conservation and Recovery Act of 1976 (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) provide for management concerning hazardous or solid wastes. RCRA covers solid waste, hazardous waste, and underground storage tanks, while CERCLA addresses the problems of hazardous waste at inactive or abandoned sites or of hazardous waste spills. Use of underground storage tanks must be in accordance with RCRA, and use, production, or storage of chemicals must comply with CERCLA. It is not anticipated that any activities at the site would result in the types of conditions regulated by CERCLA and RCRA. Also refer to Water Treatment discussion in Chapter Three. The area would be managed to minimize the potential for hazardous materials contamination. All activities involving hazardous materials and waste would be conducted in accordance with the BLM's current and future policies and procedures. No authorizations would be allowed for solid waste or hazardous materials disposal facilities on site. No impacts are likely with either alternative.

Wilderness

Pompeys Pillar does not meet many of the criteria for potential wilderness designation that is set forth under FLPMA. In addition, the site also shows considerable man-made modification, and does not satisfy the criteria of being unmarked by man's actions.

Wild and Scenic Rivers

The Wild and Scenic Rivers Act (WSRA) of 1968 (as amended) provides a way to protect selected streams in their "free-flowing condition" together with their immediate environments for the benefit of present and future generations, rather than allowing them to be developed by the building of dams and other stream altering features. The Yellowstone River has not been designated a Wild and Scenic River.

IMPACTS BY ALTERNATIVE

Wildlife/Fisheries

Affected Environment - The area supports a variety of wildlife species, some resident and some migrant. Mule and whitetail deer, turkey, raccoon, fox and coyote inhabit the area. Upland game birds present include pheasant, Hungarian partridge and sharptail grouse. Waterfowl extensively use the wetland area, river, canals and cropland, especially during the spring and fall. Nongame birds are abundant. A list of birds common to a similar habitat type is found in the 1996 document. This list is also supported by recent sightings at the Pillar (Wolf, 2000).

Fish species include channel catfish, smallmouth bass and sauger. These species occur both in the Yellowstone River and the perennial stream in the southeast area of Pompeys Pillar. The 1996 analysis contains a list of recorded, unrecorded and past fish species in the vicinity of Pompeys Pillar.

New information includes Montana State Species of Special Concern including the spiny softshell turtle, Woodhouse's toad, hognose snake and pale milk snake. With the exception of the snakes, these species are prima-

rily dependent on the riparian/wetland areas near the river, such as the slow water channels and floodplain in the riparian area.

Further clarification is being made in this analysis regarding bank stabilization along the Yellowstone River based on new information. Bank stabilization techniques would only be used if they were deemed absolutely necessary to protect the Historic Zone values and property. Bank stabilization techniques would include rock vanes and bendway weirs. Blanket rip-rap with large rock would not be an available technique and would not be used due to the negative impacts on fisheries and streambank habitat. Stabilization efforts and/or fisheries habitat improvements on the perennial stream remain the same as in the 1996 analysis.

A study was published in 1999 on the "Effects of Recreation on Rocky Mountain Wildlife in Montana" by the Montana Wildlife Society. The study analyzed the increasing effects to wildlife from human recreation. Disturbance impacts to wildlife, fisheries and neotropical birds would be minimized by confining and concentrating human and facility disturbance to a localized area.

Wildlife/Fisheries Impacts from Alternative A - Impacts would be similar to the 1996 analysis (page 63 and page 74 of 1996 analysis). In comparison to Alternative B, Alternative A would create additional impacts to wildlife habitat caused by the development of the proposed day-use area. The riparian area and described wetlands within the project area are representative of an important habitat type that is very limited across the landscape. Any manipulation of vegetation and/or removal of trees would reduce the habitat value for the species which depend upon it. The multi-strata assemblage of riparian vegetation, downed large, woody debris, large diameter trees, snags and associated cavities and insects provide important habitat for a variety of birds and small mammals. Even though the day-use area is about 2.15 acres in size, the loss can be multiplied several times because this type of habitat is so scarce.

Restoration of the existing day-use area would offset some of the described impacts over the long term, but would not mitigate all habitat losses. The existing site has been compacted and sod-bearing grasses dominate the site. Planting, seeding and management of the existing site may increase vegetation cover and structure and increase the number of native plant species in the long term; however, it is unlikely that the natural condition would be fully duplicated.

Developing wetlands near the highway (refer to Map 4 or 5) would increase habitat for shorebirds, amphibians, some waterfowl and other related avian species. The development of these wetlands would result in a no net loss in total acres but would not replace the wetlands that formed naturally under the cottonwood canopy along the river.
Limiting the season of use from May 1 to the end of October would reduce disturbance to breeding birds and other wildlife species during the spring. Fewer species may experience reduced productivity or displacement because visitation is not encouraged during that crucial breeding period.

Wildlife/Fisheries Impacts from Alternative B - Many of the impacts are similar to those described in the 1996 analysis (page 63 and 74 of the 1996 document). Compared to Alternative A, the amount of habitat lost or degraded as a result of some of the development would differ.

The day-use area (about 2.15 acres in size) for Alternative B would utilize a portion of the existing day-use area. Species that have adapted to the habitat modification should not be affected by this alternative. Those displaced may return because the western portion of the existing picnic area would be restored to its natural condition in the long term. Alternative B retains much of the riparian area and wetlands north of the interpretive center in its natural condition, thereby reducing human activity in that area. This alternative would have much less of an impact on riparian-associated wildlife species when compared to Alternative A.

The development of additional wetlands to account for the potential loss to Wetland 2 is no longer necessary with this alternative. If additional wetland habitat is desired in the future, this alternative would not preclude that activity.

Early nesting birds, migratory birds and year long resident wildlife may be exposed to greater disturbance by human activities because this alternative may extend the season of use to a year long operation. Wildlife species sensitive to human presence may experience loss in productivity or relocate to adjacent habitats. This would likely result in the loss of individual animals, but would not adversely affect population in the whole region.

There would be a very small increase in the available food sources and wildlife space available due to the smaller foot print of this scaled-back building. About 5,000 to 6,000 additional square feet of farmland space would be available for wildlife forage and space with this alternative. Species preferring short grass prairie habitat would benefit.

Threatened or Endangered (T&E) Species

Affected Environment - Any activity at the site which may affect threatened or endangered species must comply with the Endangered Species Act of 1973, as amended. Informal consultation with the U.S. Fish and Wildlife Service has

identified three listed and one proposed species that may occur in the area. They are the bald eagle (Haliaeetus leucocephalus), black-footed ferret (Mustela nigripes), pallid sturgeon (Scaphirhynchus albus), and mountain plover (Charadrius montanus) (proposed Threatened). Habitat for the mountain plover in the project area is minimal in acreage and marginal in quality and the project would therefore not jeopardize the species.

High water tables and river bottom floodplain preclude the area from providing suitable habitat for prairie dogs on which the black-footed ferret is dependent; thus, the area does not provide suitable black-footed ferret habitat.

The proposed project will not affect quantity or quality of water in the Yellowstone River and therefore will not affect the pallid sturgeon.

There are no known threatened or endangered plants in the area.

The bald eagle is the only T&E species known to inhabit the area, with the highest use in the spring. The bald eagle nest west of the Pillar has been located. A small circular boundary that runs over the west rim of the Pillar itself and a small area immediately north and south of the Pillar is the only area within the 1/2-mile buffer zone of this nest. The nest is further buffered by a large cottonwood tree stand between the Pillar and the nest.

T&E Impacts from Alternative A - None of the actions considered for any of the alternatives is likely to affect or jeopardize any threatened or endangered species or destroy or modify habitat of such a species, as provided for in the Endangered Species Act of 1973. The proposed construction activities would occur outside the 1/2-mile buffer zone of the bald eagle nests.

T&E Impacts from Alternative B - None of the actions considered for any alternatives is likely to affect or jeopardize any threatened or endangered species or destroy or modify habitat of such species. The expanded season of use under this proposal may expose bald eagles to more human disturbance during the winter and early spring months, but would not impact or affect the population.

BLM Sensitive Species

Affected Environment - Appendix 4 includes information on BLM Sensitive Species. The table presents an evaluation of the project area for the presence of the species and/or suitable habitat for each species. If the project area is not within the range of the species or if there is no suitable habitat for the species in the project area, the proposed action would have no effect on the species. Only those species whose range encompasses the project, and for which suitable habitat is present, are discussed in this analysis.

BLM sensitive species known, suspected, or which may potentially occur in the project area include the black tern, hairy woodpecker, and spiny softshell turtle.

The black tern breeds in shallow freshwater marshes with extensive stands of emergent vegetation and areas of open water including prairie sloughs, lake or pond margins, shallow river impoundments, wet meadows, swampy grasslands and occasionally river or island edges. Black terns nest semicolonially in emergent vegetation in biologically rich wetlands. Areas within and adjacent to river channels and backwaters in the project area may provide suitable habitat. Black terns forage on insects and small fish which could be secured from the river and possibly back channels. Although some suitable habitat may be present in the nearby vicinity of the proposed action there is no documented occurrence of the species in the area.

The hairy woodpecker may make use of trees in the cottonwood bottoms within the project area. Nesting, roosting, and foraging habitat is provided in this vegetative community. Removal of dead standing snags would result in loss of habitat. Removal of snags during the spring and summer months could result in injury or death of animals if a nest tree was felled. Removal of dead limbs and tops during the nesting season could displace individuals or cause abandonment of nests. Although this project could cause adverse effects to individuals of the species it would not lead toward federal listing of the species.

The spiny softshell turtle is also a Montana State Species of Special Concern and is briefly discussed in the Wildlife/ Fisheries section. The spiny softshell turtle is primarily a riverine species of shallow well-oxygenated water. It is almost totally aquatic and rarely leaves the water except to lay eggs or find a better water source. Little information is available on the reproduction of this species in Montana but sites with loose and moist soil, such as sandy beaches or river islands, are generally suitable for nesting. Large numbers of females may utilize the same area for nesting. Females begin to look for nest sites in late March or April following mating. Eggs are laid in June and July and young hatch in August and September depending on temperature. Spiny softshell turtles forage in the water on prey such as fish, frogs, tadpoles and crayfish. To avoid adverse effects to the spiny softshell turtle, any actions associated with the proposed project should avoid bank disturbance in areas of suitable nesting habitat during the period of June through September.

BLM Sensitive Species Impacts from Alternative A - No actions associated with the implementation of this project would impact black tern habitat and there would be no effect to the black tern should it occur in the area. Although this project could cause adverse effects to individuals of the hairy woodpecker and reduce suitable habitat in the day-use area, it would not lead toward federal listing of the species. Actions associated with the project should avoid bank disturbance in areas of suitable nesting habitat during the period of June through September, thereby resulting in no impacts to the spiny softshell turtle.

BLM Sensitive Species Impacts from Alternative B - Alternative B is similar to Alternative A for many of the species, including the black tern and spiny softshell turtle. This alternative retains the day-use area in a portion of its current location so that much of the riparian area immediately north of the interpretive center would remain intact and undisturbed. Mature cottonwood trees and standing snags would remain on the site to the benefit of the hairy woodpecker.

The expanded season of use under this proposal may expose sensitive species to more human disturbance during their critical breeding season. Keeping the interpretive sites near the Pillar would discourage human activity during this breeding period and reduce potential impacts to sensitive species in the area.

Wetlands/Riparian Zones

Affected Environment - Updated, more detailed information has been collected since the 1996 Pompeys Pillar EA/ Amendment (BRW, 2000). There are five wetlands within the Pompeys Pillar area which are described below. Refer to Map 6.

Wetland 1 is a jurisdictional wetland located within a broad band of riparian vegetation north of the existing gallery forest picnic area and south of the south bank of the Yellowstone River. This wetland is approximately 2.5 acres in size. This wetland would be classified by the National Wetlands Inventory (NWI) as a palustrine, scrub-shrub/forested wetland (PSS/FO). This wetland has an overall assessment rating of I (a wetland quality indicator with I being the highest quality). Dominant vegetation within the herbaceous stratum includes reed canary grass and sedges. Dominants in the shrub stratum includes sandbar willow and red-osier dogwood. Plains cottonwood is dominant in the sampling and tree strata. All of the dominant plant species are considered to be wetland plants (Reed, 1996). A multi-strata assemblage of riparian vegetation within this wetland provides excellent habitat for migrating neotropical songbirds, and a variety of small mammals. Many of the standing plains cottonwoods within this wetland are between 100 and 120 years of age. These large trees are near the end of their lifespans, though rotted hollows within them provide important habitat for a variety of birds and small mammals. Dense standing and fallen vegetation within this wetland serves to stabilize river banks and trap sediment during flooding events of the Yellowstone River.

Wetland 2 is a jurisdictional wetland located adjacent to and extending west of a ditch running north-south through the BLM property and is approximately 0.07 acres in size. This wetland lies at the base of a small embankment which separates the existing picnic area from a slightly elevated terrace upon which is situated the existing parking lot. This wetland would be classified by NWI as palustrine, emergent/scrub-shrub, temporarily flooded wetland (PEM/SSA). This wetland has an overall assessment rating of III (a wetland quality indicator with III being the lowest quality). Dominant plant species within this depressional area include reed canary grass and smooth brome. Vegetation within this depression marginally meets the definition of hydrophytic vegetation. Thick herbaceous vegetation within this wetland provides foraging and loafing cover for a variety of small mammals, and serves to settle sediments during floods of the Yellowstone River.

Wetland 3 is a jurisdictional wetland located directly north of Highway 312 in the south-central portion of the BLM property, characterized as a depressional on the broad Yellowstone River floodplain. This wetland is approximately 6.0 acres in size. This wetland would be classified by NWI as a palustrine emergent/scrub-shrub seasonally flooded wetland (PEM/SSC). This wetland has a overall assessment rating of III. This depressed area is primarily wet meadow, emergent march, with a sparse shrub stratum. Dominant species in the herbaceous stratum include reed canary grass, Kentucky bluegrass and cattail. Red-osier dogwood and sandbar willow are subdominant in the shrub stratum.

Wetland 4 is a jurisdictional wetland located in a wide portion of the ditch that runs parallel with and directly north of Highway 312 and is approximately 0.30 acres in size. The east end of the wetland is directly south of the easternmost gated entrance. Topsoil in this portion of the ditch has been scraped for use as road ballast. This wetland would be classified by NWI as a palustrine, emergent/scrub-shrub seasonally flooded wetland (PEM/SSC). This wetland has an overall assessment rating of III. The plant community that has developed is characterized as a wet meadow and sparse shrub scrub wetland. Reed canary grass is dominant in the herbaceous stratum and sandbar willow is dominant in the shrub stratus. This area is used by beaver as evidenced by many small fallen cottonwoods and willows. Though disturbed from earth-moving activities, this area provides

foraging, loafing, and traveling cover for a variety of small mammals and birds.

Wetland 5, a non-jurisdictional irrigation drain ditch, runs roughly in an east-west direction in the southern third of the project area. This ditch is part of the Huntley Irrigation Project near its terminus where it is diverted into the Yellowstone River. Dominant species in the ditch bottom are reed canary grass and smooth brome grass. Cattails are subdominant in scattered patches throughout this ditch. This ditch meets wetlands parameters, but it is considered non-jurisdictional because it was constructed in uplands and is not adjacent to any wetlands.

There are two riparian areas present. A natural riparian area occurs along the Yellowstone River. A modified riparian area occurs along the perennial stream that also served for irrigation water return. The riparian area along the river contains several cottonwood community types (C.T.) as classified by the Montana Riparian Association:

1. *Populus deltoides (black cottonwood)/Cornus Stolonifera (red-osier dogwood)* C.T.;

2. *Populus deltoides/Amelanchier alnifolia (western snowberry)* C.T.;

3. *Populus deltoides/Recent Alluvial Bar* C.T. - island area;

4. *Populus deltoides/Herbaceous* C.T. - existing picnic area.

The riparian area along the perennial stream is classified as a *Sherpherdia argentea* C.T. and *Sarcobatus vermiculatus* C.T. - southeast perennial stream and large drain ditch.

Wetland/Riparian Impacts from Alternative A - The day-use area in Alternative A would potentially impact all or parts of Wetland 2, which is a category III wetland. However, based on the conceptional nature of the designs at this time, it is unlikely it would impact 100 percent of Wetland 2.

The parking areas would not impact any wetlands. The new access road would potentially impact a small section of non-jurisdictional Wetland 5 at proposed crossings. It is possible that Highway 312 may require widening and provide a turn lane into the site when a new entrance road is constructed. There is a possibility that Wetland 4 would be impacted as a result of the widening. A determination will be made regarding the need for a turn lane during the design phase. Wetlands 1 and 3 would not be impacted by this alternative.

Locations of improvements would likely be shifted slightly within the “bubbles” identified on the conceptual plans to avoid impacts to wetlands. By managing the riparian area for Proper Functioning Condition (Appendix 3), reclamation of the drain ditch crossing on the existing access road, the potential development of new wetlands and the use of Best Management Practices and/or avoidance measures, there would be a “no net loss” of wetlands/riparian areas from the proposed action. Managing riparian areas in Proper Functioning Condition would benefit all fish and wildlife species that occupy the area.

Wetland/Riparian Impacts from Alternative B - In Alternative B, the location of the day-use area would avoid impacts to Wetland 2. All other impacts would be similar to Alternative A.

The parking areas would not impact any wetlands. The new access road would potentially impact a small section of non-jurisdictional Wetland 5 at proposed crossings. It is possible that Highway 312 may require widening and provide a turn lane into the site when a new entrance road is constructed. There is a possibility that Wetland 4 would be impacted as a result of the widening. A determination will be made regarding the need for a turn lane during the design phase.

By managing the riparian area for Proper Functioning Condition (Appendix 3), reclamation of the drain ditch crossing on the existing access road, the potential development of new wetlands and the use of Best Management Practices and/or avoidance measures, there would be a “no net loss” of wetlands/riparian areas from the proposed action. Managing riparian areas in Proper Functioning Condition would benefit all fish and wildlife species that occupy the area.

Recreation

Affected Environment - Pompeys Pillar is a unique site and offers exceptional recreational activities. The site serves as a key point in the return journey of Captain William Clark and his party and is distinguished from other sites along the L&C Trail in that it bears Clark’s signature, the only on-site physical evidence, accessible to the public, of the expedition’s passing. There are several aspects of Clark’s return voyage that make it unique. Few lengths of the expedition were marked by a separation of Lewis and Clark. This site is located on a route where Clark and his party were separated from Lewis’ party. Clark’s party included Sacagawea, “Pomp”, her baby boy for whom Clark named Pompeys Pillar, and an African American slave named York. Each made significant contributions to the success of the expedition. Sargeant Pryor, part of the Clark party, also played a key role on the return journey. He was given the

assignment of taking the horses on an overland route. Pryor's small party lost the horses and had to set out by bullboats from a site at or near Pompeys Pillar.

The construction of a small visitor center in 1992 and subsequent operation of this facility has provided an opportunity to determine the needs of visitors through interaction with the public. Many of these comments have been addressed through the conceptual planning of the proposed action. Currently, the visitor center is open daily from 8:00 a.m. to 8:00 p.m. from Memorial Day weekend through Labor Day weekend. It is open daily from 9:00 a.m. to 5:00 p.m. after Labor Day weekend through the end of September. Interpretive programs have been developed, including the use of living history, exhibits, signs, tours and brochures. In addition, an environmental education program serves over 3,000 students annually.

Several surveys have been conducted at the site, with the most recent survey conducted during the summer of 2000 (refer to the Social section). A 1994 survey revealed that 70 percent of the respondents were first time visitors to the site, and about 7 percent of the respondents were from foreign countries. The survey indicated that of those surveyed, about one half of the annual visitation is from outside of Montana. These statistics indicate a strong national and international interest in this site and suggest a need to orientate new visitors to the site before they explore the area.

Pompeys Pillar attracts a variety of visitors, all with different expectations. Briefly described below are six different target audiences and an assessment of their needs at Pompeys Pillar. Plans for the future management and development consider some of the characteristics of potential users of the site. This information assists the BLM in designing facilities and interpretive materials to accommodate many user groups.

Six target market groups were identified as a result of a meeting ("charette") held in January 1993, and a visitor survey conducted on-site in the summer 1994. These target markets, which are groupings of visitors with similar purposes and characteristics, are described below.

Target Market 1 - East/West Route Tourists

The largest potential segment of users is likely to be comprised of travelers on I-94 who are traveling east and west to and from western destinations such as Yellowstone, Glacier, and other National Parks and forests in the region. This group is characterized as families traveling in personal vehicles during the summer months who are looking for entertainment experiences enhanced with educational value. Other segments of this market include foreign travelers of Asian and European origin, teachers seeking experiences to take back to the classroom, local residents bringing visiting family and friends to the site and shoulder season travelers, especially seniors.

This target market generally arrives with little knowledge of the site. Expectations of this group may include full service restroom facilities, a desire for food and visitor mementoes, "passport" stamps, room for recreational vehicle parking, and variety of interpretive media.

Target Market 2 - Tour Groups

This group of travelers is normally comprised of a high percentage of senior citizens or adults with similar interests who are looking for educational or interesting experiences along their tour route. These groups usually travel by motor coach or arrive independently as part of a convention. It may be important for the site to accommodate 30-50 people in a short period of time. The group may expect refreshments, retail opportunities and restrooms. This segment is traveling during the peak summer months but will also travel during spring and fall. Billings hosts over 100,000 convention or tour visitors each year.

Target Market 3 - History Destination Travelers

This user group is comprised of travelers who seek experiences at sites where there is historical significance associated with the site that offers some interpretation of events. This segment is content-oriented and is generally seeking the experience of being at the exact location where the Clark party passed. High quality informational publications, displays, and informed staff will be important to this group. Access to historical references and display of collections will be a priority. Pompeys Pillar offers such an experience because of the historical significance of the site. Recent focus of Travel Montana on historic sites in Montana and a growing interest in the Lewis & Clark Bicentennial commemoration will increase this market.

Target Market 4 - Local Recreation Users

Residents of the area use the site as a recreation area for day-use activities such as picnics, hunting, fishing, canoeing and watching wildlife. Pompeys Pillar has a long heritage of family outings, such as Fourth of July picnics. Picnic facilities, restrooms, a location near the river, and close proximity to Montana's densest population area make this a good spot for day- use. Potential for a watchable wildlife site is high.

Site capabilities are high for opportunities to hunt whitetail deer, waterfowl, and upland birds. While adequate opportunities exist elsewhere to hunt deer and waterfowl, upland

bird hunting for pheasant and Hungarian partridge is dependant on gaining access.

Fishing opportunities on-site are marginal because of a limited fishery and because the Pompeys Pillar recreation site lies on the shallow side of the river. Catfish, ling, sauger, walleye and a few trout inhabit the river. Improving the fish habitat on this site would enhance opportunities for the physically challenged and others to fish.

Limited canoeing and rafting opportunities exist along this section of the Yellowstone River because few boating access sites exist. Retracing Captain Clark's journey on the river and stopping at Pompeys Pillar is reenacted each year during the Clark Day celebration in late July.

Opportunities to cross country ski exist during the winter. The terrain is flat and is not challenging; however, the site's close proximity to an urban population and opportunities to view wildlife may make up for the lack of challenging terrain or winter long snowpack.

Target Market 5 - Special Event and Festival Participants

The site may attract historical festivals, rendezvous and other special events that will result in use by those creating the event and event spectators. The festival commemorating the signature of Captain Clark is an annual event and is likely to grow. Opportunities and potential for other events is high.

Target Market 6 - School and Organized Youth Groups

This site attracts a large number of local and regional schools and organized youth groups because of its proximity to urban areas. School use is likely to increase which would also increase the shoulder season use. There is an emphasis on the Lewis and Clark curriculum in the schools and interest from the Native American schools. The combination of historical relevance and natural wildlife and environmental opportunities at the site makes it an excellent location for school or youth group visits.

Pompeys Pillar has benefitted from service work performed by groups visiting the site. Some projects have included sanding and treating the boardwalk, refurbishing benches, constructing bird houses and feeders, planting flowers, restoring damaged grass, site cleanup and constructing a trail.

The opportunity to view Clark's signature is a primary interpretive feature and focus of the site. Accessing the signature requires climbing over 100 stairs, which is limiting for some individuals. In order to provide this interpretive experience for all visitors, several alternatives would be offered. There is a replica of Clark's signature carved in sandstone in the existing visitor center. This replica would be available whenever the visitor center is open, and would be provided in the new interpretive center. In addition, an interpretive trail being developed at Pompeys Pillar would include a spotting scope focused on the actual signature. Visitors would be able to view the actual signature without climbing the stairs. These actions would be common to both alternatives.

Recreation Impacts from Alternative A - Alternative A would provide visitors an outstanding opportunity to relate to biologic, geologic and cultural features at the site through a meaningful interpretive program. Interpretive experiences would include a modest, but comprehensive, assortment of internal and external programs and exhibits. A potential feature of this alternative would be a video component which orients visitors to the site and could accommodate a large group at one time (approximately 70 visitors). As a result, visitors would be compelled to explore the site further. Indoor interpretive materials would have sufficient space to touch upon many fundamental aspects of interest, as detailed in the interpretive prospectus (BLM, 1998), without having to go outdoors. This would be especially valuable for those unable to fully explore outdoor points of interest, whether this might be due to a lack of time, inclement weather, or accessibility. Exploration of outdoor features would be encouraged and would enhance the visitors' experience. Alternative A would accommodate many of the needs of the various visitors and target markets expected to visit the site.

Retention of the current visitor center and vault toilets, while providing services closer to the pillar escarpment, may detract from the experience of visitors, because these facilities are located within the historic setting. The need for these facilities is minimal with the development of the new interpretive center just a short distance away.

The ability to only staff the interpretive center from May 1 through October would limit potential opportunities for visitors to fully enjoy and appreciate the site during the off-season, which is about half the year. It would also limit the potential to actively manage visitation during the off-season and would limit the opportunity to prevent damage to site resources. In addition, walk-in traffic may be allowed during the off-season. This would require visitors to park their vehicles at a parking area along the southern boundary of the site.

The construction of a new road and parking area would occur simultaneously with the construction of the interpretive center. This would benefit the visitor by providing the improvements at the same time.

Recreation Impacts from Alternative B - A smaller interpretive center would provide most visitors with a satisfactory opportunity to relate to biologic, geologic and cultural features at the site through a meaningful interpretive program. Space constraints inside the interpretive center would necessitate locating all but the most critical exhibits, outdoors. This may limit the interpretive experience for those unable to fully explore outdoor points of interest, due to a lack of time, inclement weather, or accessibility. This alternative may limit the tour group market segment, who are on a very limited time frame and would not have the benefit of an audio-visual orientation program. Upon full implementation of Alternative B, it is possible to provide an addition that may include an audio-visual orientation program, therefore making the impacts similar to Alternative A. Full exploration of outdoor features would be encouraged and would be essential to grasp an adequate understanding and relevance of the site. Visitors may not have the opportunity to learn about all of the relevant themes addressed in the interpretive prospectus because of the dispersed presentation of interpretive materials required under this alternative.

Removal of the existing visitor center, vault toilets, parking area and other improvements in the Historic Zone would enhance the visitors enjoyment and appreciation of the area, by more nearly replicating the historic setting. The need for these facilities is minimal with the development of the new interpretive center just a short distance away.

The opportunity to staff the facility yearlong would significantly enhance the visitor's experience at this site and would provide a much needed stronger management presence and greatly reduce the potential for damage to site resources.

The new road and parking area would be a phased-in component for Alternative B. In the short term, if the funds for the road and parking area were not available, the existing road and parking area would have to be used by visitors. This would diminish the visitors' experience. However, in the long term the impacts would be eliminated.

Environmental Education/Interpretation

Affected Environment - The 1996 Pompeys Pillar EA/Amendment did not discuss interpretation or environmental education in detail, and instead deferred these to subsequent activity plans. The document did identify critical interpretive/educational components of the site in its relevance and importance criteria. An Interpretive Prospectus was subsequently developed (BLM, 1998). Pompeys Pillar has significant potential for interpretive and environmental education opportunities because of its unique heritage, the diversity of species that inhabit the site, and the cultural and historical features.

Interest in Lewis and Clark has increased tremendously with the approaching Bicentennial of the Lewis and Clark Expedition. Since 1996, media attention toward the L&C Bicentennial has grown, which has resulted in increased visitation to Lewis and Clark sites. These demands are placing increased emphasis on the number and quality of interpretive and educational programs that need to be offered at the site.

The 1996 Pompeys Pillar EA/Amendment stated that the new interpretive center would offer both indoor and outdoor interpretive experiences on site and serve as the headquarters for special events, festivals and outreach activities. The site lends itself well to a combination of indoor and outdoor interpretive exhibits. While indoor exhibits offer alternatives for inclement weather, outdoor exhibits provide the opportunity to "experience history where it actually happened." Some subject experts suggest that there is no more powerful interpretive tool than to interpret history in the actual location where it happened. Pompeys Pillar offers this opportunity. Interpreting a riparian area or native prairie vegetation is much more immediate and genuine than viewing the same riparian area or native prairie vegetation on an interpretive panel or through a window.

The environmental education program for the two alternatives would not differ significantly. Quality environmental education programs focus on hands-on, interactive learning. A major portion of the environmental education activities at Pompeys Pillar have been and need to be outdoor oriented. With the exception of the theater in the larger facility for orientation purposes, the alternatives would be otherwise relatively equal in their ability to provide environmental education programs. Visitor services would be interspersed with the facilities for both alternatives.

There would be some general differences in the Interpretive program between the two alternatives which are discussed in the impacts section.

Interpretation Impacts from Alternative A - The 11,000 -12,500 square foot interpretive center in this alternative would offer more area for indoor interpretive exhibits. The exhibits would go beyond the central theme of "Clark on the Yellowstone" to include some of the sub-themes of the site such as railroads, steamboats, a focus on General Custer and the military, etc., as provided for in the interpretive prospectus (1998). A larger indoor interpretive space could offer the visitor more interpretation/education without having to go outside. A larger facility has the potential for an orientation theater and/or multi-purpose room which would accommodate very large groups at one time.

Interpretation Impacts from Alternative B - The 5,700 square foot interpretive center would focus the indoor

interpretive efforts primarily on the story of Clark on the Yellowstone. The key and unique interpretive focus of the Pillar is the signature itself. Providing visitors with the opportunity to view the signature would be one of the primary themes. Additional interpretive themes would include other aspects of the Lewis and Clark Expedition, local and regional history and American Indians of the region, specifically the Crow.

With the limited space for indoor interpretive exhibits in this alternative, exhibits and interpretation would be emphasized outside. This option would have the additional advantage of encouraging visitors to learn throughout the site (indoor/outdoor), thereby lending a more powerful message to the interpretive media. Should all phases of this alternative be implemented, an orientation theater/multipurpose room or other facilities could be added, thereby enhancing the visitor experience.

Visual/Scenic Values

Affected Environment - The scenic values inventoried at Pompeys Pillar have not changed significantly since the 1996 Pompeys Pillar EA/Amendment. This analysis does provide updated, more detailed information regarding the visual contrast rating that was recently completed for the preferred alternative. That information is discussed as part of this analysis.

The 1996 Pompeys Pillar EA/Amendment identified three viewsheds important to maintaining the historical setting of Pompeys Pillar: (1) the area immediately to the north, across the Yellowstone River, as viewed from the top of the rock; (2) the view of the rock from the crest of the Highway 312 interchange to the entrance and (3) the area seen by visitors from the boardwalk. The two Key Observation Points applicable to the alternatives, and which the contrast rating is based on, are the view of the rock from the crest of the interchange and the area seen by visitors from the boardwalk at Clark's signature.

The 1996 Pompeys Pillar EA/Amendment determined through the visual resource inventory procedures, that the site is to be managed under two visual resource management objectives. The National Historic Landmark portion of the Pillar will be managed as a Visual Resource Management Class II management objective. The objective of this class is to retain the existing character of the landscape. The level of change to the existing landscape should be low. Management activities may be seen, but not attract the attention of the casual observer.

The remainder of the area falls within Class III management objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract the attention but should not dominate the view of the casual observer. Scenic quality outside the National Historic Landmark boundary was rated low due to the farming and visual sensitivity rated moderate. The 1996 Pompeys Pillar EA/Amendment also states that a visual corridor will be maintained from the interchange to the National Historic Landmark. Activities within the corridor will be managed so that the NHL dominates the view of visitors as they approach the site.

Since the 1996 document, more refined locations and initial design concepts have developed regarding the interpretive center. This more specific information provides an opportunity to conduct a visual contrast rating. In addition, during public scoping, commenters suggested protecting the viewshed and scenic qualities of the site and to ensure the center does not dominate the view from the Pillar.

Visual/Scenic Impacts from Alternative A - A Visual Contrast Rating was completed using visual simulation techniques. The contrast rating was based on a schematic for the preferred alternative. It was determined that the contrast rating results would be similar for both structures, with the noted exception of the scale of the building.

The analysis determined that during peak visitor use (May to September), the interpretive center, parking area and day-use area would not likely be visible from the signature platform because the cottonwood trees would obscure the view. However, the new entrance road would be visible.

From the observation point from the interchange, the new facilities, given the design guidelines provided in Chapter Two, would result in short-term, temporary moderate contrast impacts until the landscaping/vegetation fully matures.

The 1996 Pompeys Pillar EA/Amendment states that a visual corridor would be maintained from the interchange to the Pillar. Activities within the corridor would be managed so that the Pillar dominates the view of visitors as they approach the site. The proposed location of the entrance road was analyzed through the VRM contrast rating procedures. Due to the motion of the vehicles and the location of the road within the view from the observation point at the interchange, the road presents a strong contrast in the landscape. The contrast of the road could be mitigated by providing vegetative screening with native plants along the road corridor and/or using road surface materials that blend with the landscape. These mitigation measures would be refined and adjusted as the project moves through the design phase.

Alternative A would retain the existing facility. The current Visitor Center presents a moderate contrast from the

overchange Key Observation Point and the roof is highly visible from this viewpoint and would need modification. The existing parking area would also be highly visible from the Key Observation Point at the Signature and would be very difficult to mitigate.

Visual/Scenic Impacts from Alternative B - The impacts would be similar to Alternative A. However, this alternative would remove the existing facilities, thereby eliminating the visual/scenic impacts of the building being in the historic zone. There would be no visual impacts by the location of the day-use area in Alternative B as the cottonwoods obscure the view from the key observation point on the boardwalk.

Social/Demographics

Affected Environment - Pompeys Pillar is located in Yellowstone County about 30 miles east of Billings on I-94. Billings and Yellowstone County had 2000 populations of 89,847 and 129,352, respectively, which represent increases of 11 and 14 percent since 1990. There are several smaller communities in Yellowstone County located within a thirty mile radius of the Pillar. These communities all had populations of less than 600 in 2000. These communities include Custer (population 145), Shepherd (193), Worden (506), Ballentine (346) and Huntley (411). There is a very small unincorporated community, Pompeys Pillar, located near the monument. In 2000, the population of Yellowstone County was 93 percent white and 3 percent American Indian/Alaska Native. Seventy-five percent of the population was age 18 years and over, and this percentage is expected to increase in the future. The population of Yellowstone County is expected to increase to 143,500 by 2010 and to 166,000 by 2025. The 1997 poverty rate for Yellowstone County was 12.1 percent compared to a state rate of 15.5 percent. (All census data is from the MT Department of Commerce, 2001).

The Crow Indian Reservation is located south of the Pillar and attracts considerable tourism to the area. The Northern Cheyenne Reservation is located southeast of the Pillar, adjacent to the Crow Reservation. The population of the Crow Reservation was 6,894 in 2000, an increase of 8 percent since 1990. The population of the Northern Cheyenne Reservation was 4,470 in 2000, an increase of 14 percent since 1990. The community of Hardin, which is located adjacent to the Crow Reservation, had a 2000 population of 3,384, which was an increase of 15 percent since 1990. The 2000 populations of the counties in which the two Reservations are located, Big Horn and Rosebud, are 12,671 and 9,383 respectively. The American Indian/Alaska Native populations of these counties were 7,560 (60%) for Big Horn County and 3041 (32%) for Rosebud County. The 1997 poverty rates were 29.6 percent for Big Horn County and 19.9 percent for Rosebud County, compared to the state rate of 15.5 percent. (All census data is from the MT Department of Commerce, 2001).

During scoping, ideas and concerns were identified by those who participated in the effort. Many of these concerns were related to the rest stop and will not be discussed because the rest stop has been eliminated from consideration. Of the letters and comment forms that discussed the new interpretive center, almost all supported the center. However, many people qualified their support by indicating it should be designed to maintain the visual qualities, naturalness, historical aspects and tranquility of the area and to emphasize the educational value of the site. Commenters were also concerned about commercializing the area, the size of the interpretive center, and keeping development away from the Pillar and out of the floodplain and riparian areas. Several comments suggested that the interpretive center should be built away from the Pillar itself. A few commenters mentioned concern for school children and traffic/safety. Comments on the importance of the natural resources of the area gathered at the scoping meetings included: the rural setting, the naturalness of the area, wildlife, clear air, openness of the area, peace and quiet, scenic qualities, and the river. Comments on the importance of the cultural/historic resources also gathered at the scoping meetings included the connection to Lewis & Clark, seeing the area as a focal point for Yellowstone Valley history, the petroglyths, and the long association with Native Americans. Issues and concerns included: desecrating the site, wildlife habitat/riparian protection, maintaining visitor control to preserve vegetation, and concern about wetlands, air pollution, sanitation and traffic. Ideas on how the facilities should be designed included: facilities should not detract from the natural setting, the interpretive center structure should be compatible with the setting, use natural building materials to blend in with the surroundings, and the center should not overwhelm but should complement the Pillar. Many of the ideas discussed at the scoping meetings revolved around the placement of the visitor facilities, how to plan for the bicentennial and afterwards, and suggestions for recreation and interpretation.

In 2000, the Institute of Tourism and Recreation Research at the University of Montana completed a visitor survey at Pompeys Pillar (ITRR, 2001). The survey found that 22 percent of the visitors were from Montana. The non-Montana visitors came from a variety of locations, mostly from within the United States. The median distance from home was 800 miles and the median trip length was 9 nights. Forty-four percent planned their visit on the day they visited; 16 percent planned their visit over 6 months in advance. Eighty-four percent of the visitors were on their first visit to the Pillar. Just over half of the visitors stayed under one hour; none stayed more than 4 hours. The most typical group type was a family (44%), or couple (27%)

with an average group size of just over 3. Fewer than 30 percent of the groups included a child. According to the respondents, the most important reasons to visit the site were to see/be where Lewis & Clark were, to learn about Lewis & Clark, and to recreate and/or relax. For most visitors, the historical association of the site with Lewis & Clark's expedition was an important aspect of the groups' decision to visit. Almost 60 percent of those surveyed did one of the following: read Undaunted Courage, read the L&C journals, read other L&C books or watched the documentary on the Corps of Discovery. The specific reasons given by visitors who were motivated by elements of the Lewis & Clark history to visit the site included: general interest in the expedition and history of Lewis & Clark, have wanted to see it for a long time, Sacagawea, and the signature on the rock.

Over ninety percent of the respondents were satisfied or very satisfied on their visit with the access to historical features, condition of natural features, maintenance of the facilities, and cleanliness of the area. When asked which elements were most important for visitor satisfaction at this site, the quality of the Lewis & Clark information was clearly rated as most important followed by cleanliness of the area, condition of the natural features and access to historical features. Eighty percent of the respondents indicated they would make no changes or improvements at the site. Responses from the twenty percent that would make changes or improvements included: more restrooms; more/better information, more detail, maps, interpretive signs; and leave non-commercial/no more development. Information from an earlier visitor survey (BLM and PPHA, 1994) offered support for some of this information. The 1994 survey respondents indicated they liked the view, the signature and historical significance of the area. Activities participated in by at least 45 percent of the respondents included climbing the Pillar (67%), viewing scenery (66%), and visiting the Visitor Center (46%). Respondents were asked about satisfaction with different aspects of the area and their visit. Sixty percent rated the condition of the natural resources as excellent. Fifty percent rated the appropriateness of the facilities and development as excellent. Forty percent rated the variety of activities as excellent. Other facilities/activities respondents would like to see at the site included: historical displays (42%), self-guided tours (40%), and interpretive trails (33%).

Social Impacts from Alternative A - Local residents mentioned many concerns but most of them were associated with the rest area, which has been dropped from consideration. Concerns about the potential for flooding and ice jams are discussed in the section on Floodplains/Water Quality. Traffic safety issues are addressed under the Assumptions section of this chapter.

With a larger visitor center, this alternative may focus the visitor less clearly on the natural, visual, outdoor aspects of the setting, which may not be consistent with what many of the commenters emphasized during scoping. Refer also to the sections on impacts to Recreation Use, Visual/Scenic Values, Interpretation/Environmental Education, Cultural and Economics for Alternative A.

Social Impacts from Alternative B - Local residents mentioned many concerns but most of them were associated with the Rest Stop, which has been dropped from consideration. Concerns about the potential for flooding and ice jams are discussed in the section on Floodplains/Water Quality. Traffic safety issues are addressed under the Assumptions section of this chapter.

This alternative may focus the visitor more clearly on the natural, visual, outdoor aspects of the setting, and the Clark journey, which is more consistent with what many of the commenters emphasized during scoping. Refer also to the sections on impacts to Recreation Use, Visual/Scenic Values, Interpretation/Environmental Education, Cultural and Economics for Alternative B

Economics

Affected Environment - The economic conditions described in the 1996 Amendment still exist. To summarize, the economy of Billings and Yellowstone County is diversified and stable, experiencing slow steady growth. Along with retail, manufacturing, medical, service, and agricultural industries, the area is also a major tourist service center. The population of Billings and Yellowstone County is the primary change since the publication of the 1996 Amendment. Year 2000 Census data show the population of Billings to be 89,847 and Yellowstone County to be 129,352.

The economic analysis in the 1996 Amendment focused on recreation and agriculture, the two activities most likely to be affected by management decisions. The agriculture analysis focused on farming activities currently occurring on about 200 acres within the ACEC. This analysis is generally still accurate, but types of crops, acreage per crop, and value per unit of production may be different.

For recreation, the 1996 Amendment focused on visitation trends at Pompeys Pillar through 1995. The Amendment also described trends in recreation in general and how those trends would likely affect visitation to Pompeys Pillar in the future. Estimates through 1995 showed that visitation had increased to about 42,000 visitors, up from about 9,900 visitors in 1989. The BLM estimates visitation from 1995 through 2000 to be:

Year	*Visitors*
1995	42,000
1996	43,000
1997	48,000
1998	58,000
1999	41,000
2000	39,000

Visitation in 2000 (39,000) is slightly lower than 1995 visitation (42,000). In the 1996 Amendment, the analysis estimated 1995 visitation contributed about $395,000 and 19 jobs to the area's economy. Because visitation is slightly lower in 2000 than 1995, the economic contribution of visitors to Pompeys Pillar is likely to be slightly lower. Some factors influencing some recent peaks in visitation could include popular L&C novels and documentaries, and the emphasis on L&C Bicentennial. Declines, particularly in 2000, could be attributed to higher gas prices and the recent fire season.

Economic Impacts from Alternative A - In the 1996 Amendment, the analysis based the economic impact analysis on potential visitation of about 250,000 visitors per year. Based on some additional studies potential visitation might be about 130,000 visitors per year by the year 2020, about half of the original estimate. Annual visitation of 130,000 is estimated to contribute about $1.6 million and 72 jobs annually to the Montana economy. This level of economic activity is probably optimistic. It assumes: (1) 75 percent of visitors are from out-of-state; and (2) some portion of this spending is due to visitors remaining in Montana for a longer period of time than if they had not stopped at Pompeys Pillar (i.e., the longer visitors remain in the state, the more money they are likely to spend).

This estimated economic activity does not include spending for construction, operation and maintenance of facilities. The 1996 analysis originally estimated construction of an 11,000-12,000 square foot facility would cost about $3 million and annual operation and maintenance costs would be about $300,000. New construction costs are estimated to be about $9.4 million and operations and maintenance costs to be about 8-10 percent of that, or $750,000 - $940,000 annually.

No change to existing management decisions would be made regarding farm operations; therefore, economic conditions for farming at Pompeys are not expected to change.

Economic Impacts from Alternative B - For economic impacts, the primary difference between Alternative B and Alternative A is that Alternative B envisions constructing a smaller facility, about 5,700 square feet (versus about 11,000 - 12,500 square feet under Alternative A). Though the facility is smaller, the annual visitation would still be estimated to be about 130,000 visitors. So, economic impacts would be similar to Alternative A. However, construction, operation and maintenance costs would be lower than Alternative A. Construction of a 5,700 square foot facility would be about $4 million and could increase to $9.4 million with the development of additional facilities such as interpretive trails, exhibits, a theater pod, etc. Annual operation and maintenance costs would be about $320,000 - $400,000 for the lower-cost scenario and $750,000 - $940,000 with the inclusion of the additional facilities.

There would be little economic impact associated with removing existing facilities as proposed in this alternative. Extending the season of use beyond the peak tourism season at the site may increase economic activity, but it would probably not be substantial unless visitation increased substantially in the off-peak seasons.

No change to existing management decisions would be made regarding farm operations; therefore, economic conditions for farming at Pompeys are not expected to change.

Floodplain and Water Quality (drinking or ground)

Affected Environment - The Pompeys Pillar property lies east and outside of any Yellowstone County Official Floodplain Maps. State and county regulations require licensed surveys and professional analysis be completed to determine the 100-year flood elevation and hydraulic calculations for velocities. Through assistance from the United States Geological Survey (USGS) and MT DNRC, a Floodplain Analysis and Delineation was completed. This study established the 100 and 500 year flood elevations, flood way delineations and volume quantities. Combining this information with a new topographic map showed the entire property, except for a narrow strip of land between the trees and the north field edge stretching from the Pillar to the north/south drainage return ditch, is under the 100-year flood elevation. The study also provided new information showing that the present log visitor building floor elevation is approximately 1 foot above the 100-year flood elevation and the vault toilet floors are at the 100-year flood elevation.

Construction and development activities will conform to all pertinent floodplain and environmental regulations. A description of how this project has or will comply with Executive Order 11988 on Floodplain Management is provided in Appendix 5. In addition, this project is being designed to comply with and be permitted by Yellowstone County Floodplain Regulations that are consistent with, and more stringent than, the National Flood Insurance Program and the Montana Floodway Management and Regulation Act.

The proposed new building site was evaluated by subject experts. This proposed project may require a Section 404 permit from the Corps of Engineers. The proposed development location is situated on one of the higher areas within the floodplain. Subsequently, limited fill placement would be required. Revegetation and landscaping would be completed around structures to prevent soil erosion, provide flood protection and provide wildlife habitat.

The Yellowstone River is prone to ice jams forming and damming the river flow. Typically, where major damming and resultant ice flow damages occur, the cottonwood tree trunks lose chunks of bark as high as 6 to 10 feet up. The edges heal over, leaving a patch of white barkless tree trunk visible. An investigation of the Pillar's 100 plus year old cottonwood tree stands show no ice flow damage. Channel configurations, the rock Pillar and the cottonwood tree stand serve as a natural mechanism to protect this portion of the river from ice jams.

Water provided by the BLM must conform to the provisions of the Safe Drinking Water Act of 1974. The act establishes protective measures for culinary water systems by providing standards which regulate allowable contaminant levels. Requirements include monitoring provisions and sampling frequencies, generally at least one sample per month, for all water systems the BLM manages, including recreation sites. Under all the alternatives, the interpretive center, and any other facilities that offer running water, must comply with the Act. This includes the provision for periodic testing to assure water quality, thereby, eliminating any potential impacts.

Waste Water Treatment - Waste water treatment systems will comply with MT DEQ regulations**.** Consultation with the Yellowstone County sanitarian and Montana DEQ has been ongoing regarding waste water treatment system feasibility in this floodplain. Montana DEQ regulations require the two best sites on the property be located and tested in the preliminary design planning stage. This is to assure the secondary site is already approved should the primary site fail. These sites will undergo extensive soil and groundwater testing to assure proper design to meet the more stringent criteria for building in a floodplain. This may include conventional and alternative systems such as mounds, fills, subsurface, and wetlands.

Floodplain/Water Quality Impacts from Alternative A - Even though the entire area is in the 100-year floodplain, the proposed development location for the building is on a slightly higher area, which requires limited fill placement. Subsequently, there is no increase to flood water levels and velocities, thereby not impacting adjoining lands. The road would be constructed to normal contours of the topography, and not elevated. As a result, there would not be an increase to flood water levels and velocities. Based on the design and management common for the alternatives, there are no other impacts to floodplain or water quality, as all development would be done in conformance with all applicable design regulations and laws.

Alternative A would retain the existing visitor center and facilities. These facilities are not consistent with the direction provided in the floodplain regulations. Potential impacts would include closures of the facilities during high flood times and potential damage to the existing facilities.

Floodplain/Water Quality Impacts from Alternative B - Under Alternative B, the existing facilities would be removed. The removal of these facilities would avoid the potential impacts during a flood event associated with leaving the facilities. Removal of existing facilities would also bring the area into compliance. Other impacts would be similar to Alternative A.

Irreversible/Irretrievable Impacts

Once established, facilities are likely to be maintained into the foreseeable future. The farmland and small amount of vegetation displaced by facilities and trails would be an irretrievable loss. Although implementation of either alternative would provide information about the natural, historic and cultural setting, it would change the character of and increase use on the site.

Adverse Effects Which Cannot be Avoided

Construction of facilities would adversely affect soils and vegetation. These impacts could not be avoided but would be minimized through proper construction techniques. Facilities would concentrate public use and effects of public use such as trash and vandalism in this area. The effects could be reduced but not totally eliminated through effective visitor management.

Cumulative Impacts

The following effects would be in addition to the cumulative effects discussed in the 1996 Pompeys Pillar EA/ Amendment and the effects discussed in the Pompeys Pillar ISTEA EA. (BLM, 1999)

The following activity, if implemented, would add a measurable cumulative effect:

-The construction of a grain handling facility directly east of the entrance to Pompeys Pillar and only 3/4 miles from the Pillar itself would include four concrete silos, each about 42 feet in diameter and 150 feet tall. The project would impact the visual aesthetics from the Pillar, which currently allows visitors to experience much of the same view Clark and his party had in 1806.

The following activities could add a measurable cumulative effect to Alternatives A and B:

- If the grain elevator is constructed with its resulting increase in truck traffic, some westbound visitors may decide to take Route 312 into Billings rather than make a left hand turn to return to I-94. This could increase traffic in an area where the population is growing.

- The reconstruction of the Highway 312 overpass off I-94, which leads to the Pillar, would begin in fall of 2001 and last for about 1 1/2 years. This work should be completed before the Bicentennial but may occur concurrently with the construction of the new Interpretive Center and road and grain handling facility. If these projects occur concurrently, this may be preferable to a longer-term impact from extended construction periods. If these construction activities continued into the peak Bicentennial seasons, the visitors' experience would be diminished at a very important time.

The following activities would not add a measurable cumulative effect to either Alternatives A or B:

- The repair of the Bundy Bridge, which crosses the Yellowstone River immediately to the north and west of the Pillar area, should be completed prior to the beginning of construction on the Interpretive Center.

The following activities have been included in the new projections for visitation to the Pillar:

- The increasing population in Yellowstone, Big Horn and Rosebud counties, would be a part of the projected increase in tourism and may include an increased interest by local Indian Tribes.

- The nationwide increasing popularity of cultural tourism which may help extend the effects of the Bicentennial beyond the anniversary years.