National Park Service
U.S. Department of the Interior
Organ Pipe Cactus National Monument
Ajo, Arizona

Proposed Management Actions to Improve Safety Along State Route 85

Environmental Assessment

May 2011

Proposed Management Actions to Improve Safety Along State Rt 85

Environmental Assessment

Summary

Organ Pipe Cactus National Monument (Organ Pipe) proposes actions to improve visitor safety along the State Route 85 (SR 85) corridor, which runs through the monument from Why to Lukeville at the Mexican border. Two projects are proposed: a re-designed parking and visitor access area at the monument's northern entrance, and a new entrance to Alamo Canyon Road. Both areas present human health and safety issues and an inconvenience for motorists due to their proximity and orientation to SR 85.

Traffic flow along SR 85 is heavy at times, and the speed limit of 65 mph is often exceeded by motorists. Visitors stopping at the monument entrance are obliged to slow down considerably while still in traffic on SR 85, and turn sharply into the parking area. Currently there is insufficient parking to accommodate more than one or two cars; recreational vehicles cannot fit into the parking area without blocking access for other vehicles or obstructing the view of the sign. A re-designed parking area would remedy these less-than-ideal conditions and allow motorists to more safely access the entrance sign.

The entry onto SR 85 from Alamo Canyon Road does not allow for a clear, long-range view to the south on the highway, and combined with high traffic speeds on SR 85, this location does not optimize safety. Moving the intersection further north would allow motorists entering SR 85 to see northbound vehicles at a greater distance, thereby providing more time to safely merge into traffic. The proposed actions would improve the health and safety of motorists traveling along SR 85.

This document evaluates two alternatives: a no-action alternative and an action alternative. The no-action alternative describes the current conditions and consequences if the monument entrance parking area and the Alamo Canyon Road entrance remain unchanged. The action alternative addresses construction of a new entrance sign parking area configuration on Bureau of Land Management lands (BLM) and a new entry to Alamo Canyon Road.

This environmental assessment has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet objectives of the proposal, 2) evaluates potential effects on monument resources and values, and 3) identifies mitigation measures to lessen the degree or extent of those effects. Resource topics included in this document because their resultant impacts may be greater-than-minor include human health and safety, visitor use and experience, and soil. All other resource topics were dismissed because the projects would result in negligible or minor effects on those resources. No major effects are anticipated. Public scoping was conducted to assist with the development of this document.

Public Comment

If you wish to comment on this environmental assessment, you may post comments online at http://parkplanning.nps.gov/orpi or mail comments to: Superintendent, Organ Pipe Cactus National Monument, 10 Organ Pipe Drive, Ajo, Arizona 85321.

This environmental assessment will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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PURPOSE AND NEED

Introduction

Organ Pipe Cactus National Monument (Organ Pipe) is in southwestern Arizona, near the U.S./Mexico border and approximately 40 miles south of the town of Ajo. The monument was established by Presidential proclamation on April 13, 1937, to preserve more than 330,000 acres and protect a representative part of the Sonoran Desert that contains organ pipe cactus (*Stenocereus thurberi*), a large, columnar cactus rarely found in the United States. The monument is also home to many animals that have adapted to extreme temperatures, intense sunlight, and little rainfall. In 1976, Organ Pipe was designated an international biosphere reserve by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) under the direction of the Man and the Biosphere Program. Approximately 95% of the monument (about 312,600 acres) was designated as wilderness on November 10, 1978 (Public Law 95-625). The monument shares 30 miles of international border with Mexico.

The purpose of this environmental assessment is to examine the environmental impacts associated with two projects along SR 85: re-designed parking for visitors at the monument's northern entrance sign, including space for recreational vehicles; and construction of a new entrance to Alamo Canyon Road. 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*).

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 a 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, including the opportunities that otherwise would be present for the enjoyment of these resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment, but an impact would be more likely to constitute an 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.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated. An impairment analysis for the preferred alternative can be found in Appendix A.

Background

The portion of SR 85 that passes through Organ Pipe was constructed in 1942. It followed the bed of County Road 131 for approximately 11 miles, and diverged from the original road for the remainder of the distance through the monument. In 1944, the road was seal coated to improve its durability, and by 1945 concerns were raised about motorists exceeding the 35 mph speed limit in the monument. In a photograph taken in 1965, the highway appears to be paved, and the tendency of the road surface to concentrate precipitation toward the road edges required brush-clearing along the highway that year. In 1966, Organ Pipe staff devoted significant time to clearing brush growing in front of signs on the highway, as part of the monument's effort to "improve safety conditions along Arizona Highway 85" (Rutman 1997). The Arizona Department of Transportation (ADOT) currently maintains the road and an area that extends 33 feet on either side of the centerline. The increasing amount of commercial and other vehicle traffic on SR 85 is one of the most significant factors affecting visitor use and experience in the monument.

Approximately 503,000 vehicles passed through Organ Pipe in FY10. According to Arizona Department of Public Safety records, there were 10 motor vehicle accidents within the monument during the same time period. Parking at the northern monument entrance is not sufficient, in terms of access or size, to accommodate the number of visitors potentially using that area; a drainage to the north of the entrance sign limits the space available to pull off SR 85, and visitors pausing at the sign are obliged to enter the parking area at a sharp angle directly from the highway. Once off the highway, visitors have little space in which to safely park, and there is virtually no room for recreational vehicles that does not obstruct the view of the sign itself. Moreover, the configuration of the intersection of Alamo Canyon Road and SR 85 is not adequate as a safe point of egress from Alamo Canyon campground. Visitors to the campground, when re-entering SR 85, do not have a clear view of oncoming northbound traffic, and the 65 mph speed limit on 85 adds to the difficulty of getting back on the highway. The combined effect of all these factors is reduced health and safety for monument visitors.

Purpose and Need

The purpose of the proposed action is to improve human health and safety along SR 85 within Organ Pipe. The project is needed in order to accomplish the following objectives:

1. Provide for improved human health and safety for travelers along SR 85
2. Provide enhanced visitor experiences at popular monument destinations
3. Minimize impacts on resources and maintain a natural landscape

Relationship to Other Plans and Policies

Current plans and policies that pertain to this proposal include the 1998 Organ Pipe Cactus National Monument *General Management Plan* (NPS 1998), and the 2006 *Management Policies* (NPS 2006). Following is more information about how this proposal meets the goals and objectives of these plans and policies:

- The 1998 Organ Pipe Cactus National Monument general management plan calls for collaboration with the Arizona Department of Transportation and other entities to assess

traffic impacts on wildlife, vegetation, cultural resources, human safety, and the visitor experience and calls for the implementation of measures to reduce impacts on monument resources while accommodating traffic.

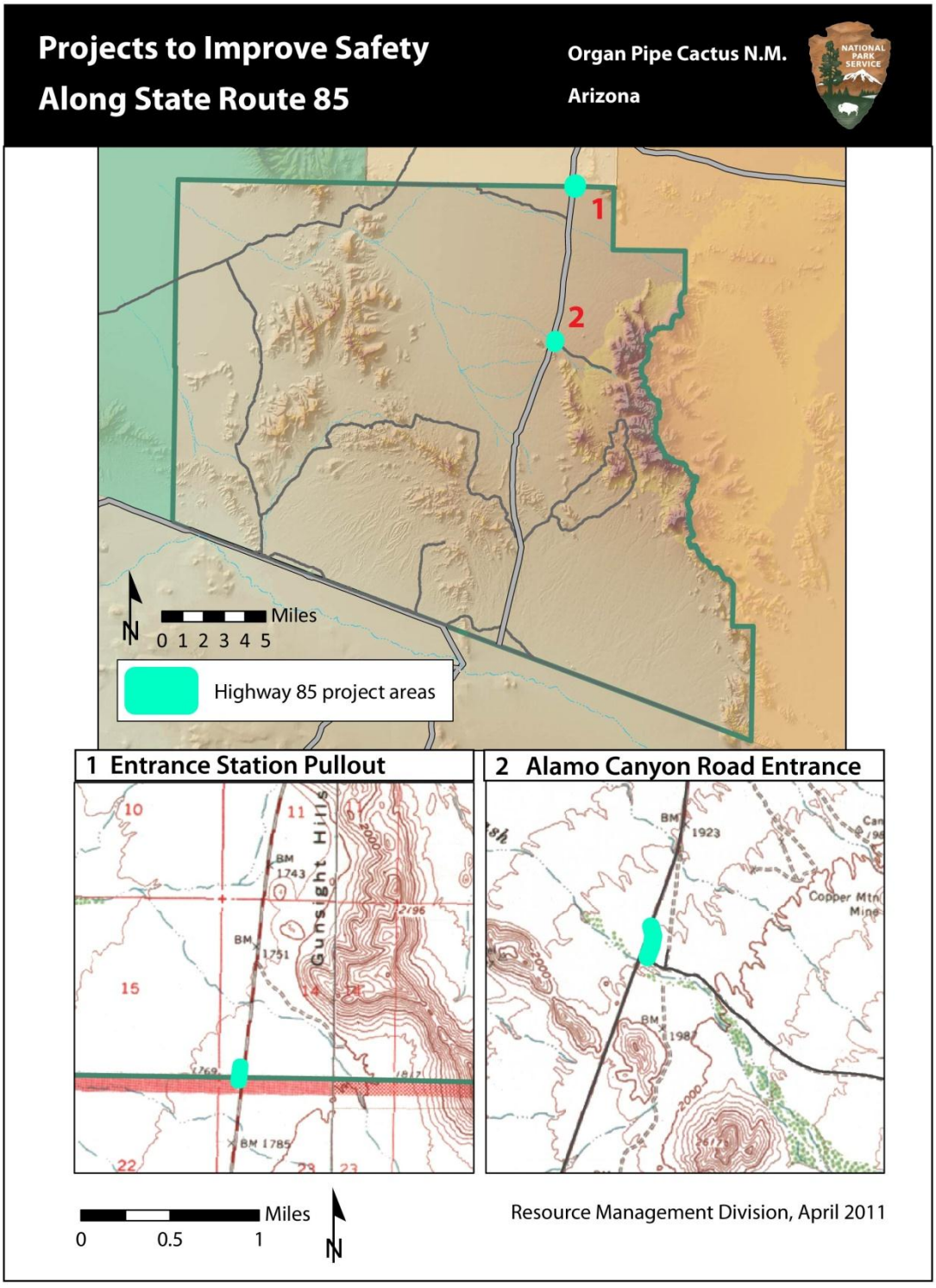
- The proposal is consistent with the goals and objectives of the *2006 National Park Service Management Policies* (NPS 2006) stating that the Park Service will provide visitors with opportunities to enjoy the extraordinary natural and cultural values of the parks in a safe and healthy environment. The proposed actions will improve visitor safety while continuing to afford unique recreational experiences.

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 proposed goals while minimizing adverse impacts. Organ Pipe Cactus National Monument conducted internal scoping with appropriate National Park Service staff, as described in more detail in the *Consultation and Coordination* chapter. The monument also conducted external scoping with the public, interested/affected groups, and Native American tribes.

External scoping was initiated with the distribution of a scoping letter to inform the public of the proposal to construct a new parking area at the northern entrance sign and a new entry to Alamo Canyon Road, and to generate input on the preparation of this environmental assessment. The scoping letter, dated May 25, 2010, was mailed to 26 addresses, including landowners adjacent to the monument, various federal and state agencies, affiliated Native American tribes, local governments, and local news organizations. Scoping information was also posted on the monument's website. Two responses were received. One Native American tribe responded with a request to be kept informed of the project's progress. More information regarding external scoping and Native American consultation can be found in *Comments and Coordination.*

Figure 1 – Project Location



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 with "significant" effects. The identification of "major" effects would trigger the need for an Environmental Impact Statement. Where the intensity of an impact can 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" with "minor or less" effects. "No measurable effect" is used by the NPS in determining whether 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 impacts are not reasonably expected, or
- through the application of mitigation measures, there would be minor or less effects (i.e. no measurable effects) caused by the proposed actions, and there is little controversy on the subject or reason to otherwise include the topic.

Due to there being no effect or no measurable effects, there would either be no contribution toward 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, indirect, and cumulative effects is presented.

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 Organ Pipe Cactus National Monument. 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 will be used to analyze impacts against the current conditions of the project area in the *Environmental Consequences* chapter.

Human Health and Safety

In accordance with the 2006 *Management Policies* (NPS 2006), NPS and its concessioners, contractors and cooperators will endeavor to provide a safe and healthful environment for

visitors and employees. The need to protect human health and safety is the primary reason for this analysis.

Human health and safety can be improved along this reach of SR 85. Between 30,000-50,000 vehicles travel SR85 every month. It is a two-lane highway with narrow shoulders. Traffic often exceeds the 65 mph speed limit. The configuration of the entrance sign and the entrance to the Alamo Campground access road pose safety risks to travelers. The proposed actions would improve the health and safety of motorists traveling along SR 85 and, therefore, this topic has been retained for further analysis.

Visitor Use and Experience

According to the 2006 *NPS 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 will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the National Park Service will 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 *NPS 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).

Approximately 325,000 visitors come to Organ Pipe annually. Early winter to mid-spring is the peak season for recreational visitation and almost all visitors come to the monument in personal vehicles. The monument is located several hours drive from any significant population center. Most visitors come for the solitude and to experience the remote Sonoran Desert wilderness. In addition to visitors for whom the monument is a destination, more than one million vehicles annually drive through the monument to and from points in Mexico. The monument is also used by researchers from around the world and serves as a natural laboratory for understanding and managing desert ecosystems.

Many dedicated national park visitors enjoy collecting pictures of themselves in front of national park entrance signs, and the entrance sign at the monument's northern boundary is frequently photographed. The existing pull-out area at the entrance was not designed to allow for this activity and, therefore, does not have an adequate access route or sufficient parking, especially for recreational vehicles.

Alamo Canyon Campground is a popular camping site and the only primitive campground in the monument. The area affords one of the few opportunities for camping where visitors can experience the sense of solitude for which the monument is known. There are also hiking trails in the area that are used by campers and day visitors. In fiscal year 2009, approximately 10,582 vehicles used the Alamo Canyon Road and 480 visitors camped at this site. The preferred alternative would improve access to popular visitor destinations in the monument and, therefore, this topic is analyzed in detail.

Soil

According to the National Park Service's 2006 *Management Policies*, the National Park Service will 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 will 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.

The monument lies in the Basin and Range physiographic province, with valleys composed of alluvial material (gravel, sand and silt) situated between north-south trending mountain ranges. Soils at the two project locations are similar. The monument entrance sign project occurs within Rillito gravelly, sandy loam, and the Alamo Canyon Road project occurs within Cipriano gravelly loam. These medium-textured soils are well-drained, moderately susceptible to erosion, and produce moderate runoff. Slope ranges from 0-5 percent (NRCS 2011). The monument entrance sign is in an area with sparse vegetation and little topographic variability. The project would incorporate an area that has been previously developed for construction of the existing entrance sign. At Alamo Canyon Road, the new route has a rolling topographic profile.

The soil at both sites would be affected by the operation of heavy equipment. Construction and site preparation activities, such as clearing and grading, could result in compaction and trampling, as well as sediment transport. Because there is the potential to have a greater-than-minor impact on the soil resource, this topic is carried forward for further analysis.

Impact Topics Dismissed From 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 proposed project areas are in the Arizona Upland subdivision of the Sonoran Desert; vegetation may be characterized as palo verde-mixed desert scrub, and includes species such as saguaro (*Carnegiea gigantea*) and organ pipe (*Stenocereus thurberi*) cactus, foothill and blue palo verde (*Parkinsonia microphylla* and *P. florida*) trees, ocotillo (*Fouquieria splendens*), creosote bush (*Larrea divaricata*), bursage (*Ambrosia* sp.), and barrel cactus (*Ferocactus wislizenii*).

Vegetation would be displaced, disturbed, and/or compacted in the construction areas, particularly in the area immediately north of the existing monument entrance sign parking lot and in the footprint of the new road at Alamo Canyon. At the entrance sign, some shrubs would be removed, primarily creosote, bursage and ratany (*Krameria* sp.), but trees on the site would be preserved, and small cacti would be moved when practicable. There is a single saguaro cactus less than one meter tall at the entrance parking area site, and it would be locally transplanted. Vegetation affected at Alamo Canyon Road would primarily be creosote and bursage. A survey of the proposed re-alignment route revealed that no organ pipe cacti or trees would be affected. One saguaro measuring approximately 3 meters in height, and four saguaros of 0.6 meters or less in height, were found. All of them would be transplanted to nearby areas as part of the restoration effort. Larger saguaros on the route would be avoided.

Disturbed areas would be revegetated and rehabilitated following construction. Ground disturbance has the potential to introduce and/or promote exotic plant species; this will be monitored and managed as part of the projects.

Removal and/or disturbance of vegetation in the project areas is expected to result in negligible impacts to vegetation. In the worst-case scenario, if cacti were destroyed, the impacts to vegetation would be minor. Because these impacts are predicted to be minor or less, this impact topic has been dismissed from detailed analysis.

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). The

proposed boundary sign parking location is in a heavily disturbed area immediately adjacent to Highway 85. The proposed Alamo Canyon realignment area has not been previously disturbed, but is in close proximity (approximately 250 feet) to Highway 85. The presence of human disturbance and a high volume of traffic along the highway have displaced much of the native wildlife in the proposed project areas. Some smaller wildlife species, such as rodents, lizards and invertebrates, could be disturbed during construction, and there could be a negligible to minor loss of habitat in the localized areas. The predicted impacts to wildlife species from the proposed actions are negligible to minor; therefore, this impact topic has been dismissed from detailed analysis.

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).

There are three known endangered species in the monument: Quitobaquito pupfish, Sonoran pronghorn, and lesser long-nosed bat. Candidate and sensitive species include acuña cactus (candidate), Sonoyta mud turtle (candidate), Sonoran Desert tortoise (candidate), and Organ Pipe shovel-nosed snake (state-listed). Neither the Quitobaquito pupfish nor the Sonoyta mud turtle occur near any of the project sites; however, suitable habitat for Sonoran pronghorn, lesser long-nosed bat, Sonoran Desert tortoise and Organ Pipe shovel-nosed snake does exist within the proposed project areas.

The proximity of the project limits to the SR 85 roadway, and associated levels of traffic volume and noise, makes it unlikely that pronghorn would forage within the project limits for any extended period of time. To avoid impacts on the species during the fawning season, construction activities would be conducted between the end of July and the beginning of March at all project sites. Any disturbance of pronghorn caused by the noise and movement associated with construction would be localized and temporary. Substantial changes in surface hydrology that would affect pronghorn habitat downstream in the Valley of the Ajo are highly unlikely.

The proposed project areas are all within approximately 2 miles of the large bat roost at Copper Mountain, but construction activities so close to the existing noise of SR 85 are unlikely to disturb bats in the maternity colony to the point where they would avoid or vacate the roost. Bats typically occupy the roost from mid-April to mid-September; disturbance could be mitigated by avoiding construction during that time frame. The proposed actions would not directly affect any potential bat roosting habitat, and no bat forage plants would be destroyed during project implementation.

Desert tortoise and shovel-nosed snakes are also found in the vicinity of the project sites. Heavy equipment could potentially destroy shelter sites and cause direct mortality of individuals crushed in burrows or sheltering under vegetation. However, tortoise and snake surveys would be conducted immediately pre-construction to look for burrows and animals, which would be avoided or moved.

While not a listed species, the cactus ferruginous pygmy owl continues to be monitored by Organ Pipe staff, and could potentially be present in the project areas. No trees or columnar cacti would be destroyed at the monument's northern boundary or at Alamo Canyon, and changes in surface hydrology that might affect xeroriparian vegetation upstream and downstream are unlikely. Noise disturbance would be localized and temporary. Since no trees or columnar cacti would be lost as part of the projects, there would be no impacts to the cactus ferruginous pygmy owl.

The geographic scope of the project would be limited and information provided recently by the FWS and state wildlife agency for other projects, in conjunction with NPS staff knowledge of the proposed project areas, were all used to develop a comprehensive special status species list. On February 1, 2010, a NPS wildlife biologist surveyed the proposed project areas for potential impacts to special status species and determined that with implementation of mitigation measures (i.e. avoidance and/or plant salvage/transplantation), impacts to foraging and nesting habitat would be negligible and that there would be "no effect" to the lesser long-nosed bat or any of the other special status species mentioned in this section. Because there would be no effect to special status species and no unacceptable impacts would occur, this topic is dismissed from further analysis in this document.

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 fulfill 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.

Surface water resources at Organ Pipe Cactus NM are limited. Water availability varies seasonally, with the majority of rainfall occurring in late summer as geographically isolated thunderstorms, or in winter as widespread, regional storms. These storms typically produce brief ephemeral flows that quickly infiltrate streambeds; only rarely is there sufficient runoff to cause flooding in the normally dry washes. All of the major watersheds within Organ Pipe flow in a westerly direction- either northwest to the Gila River, or southwest to the Gulf of California. No perennial (permanent) rivers or streams exist within the monument.

The proposed project areas do not contain surface waters, and are mostly dry, except for periodic runoff during storm events. Water quality, water quantity, and drinking water are not expected to be affected by the projects. One culvert would be installed at the northern monument entrance sign area and approximately three new culverts would be installed on the proposed Alamo Canyon Road entrance route. All culvert installation and construction would follow NPS standards and guidelines, as well as Arizona Department of Environmental Quality regulations, to minimize erosion and sediment movement. The proposed actions would result in short-term soil disturbance and the potential for negligible to minor soil erosion. In the long-term the areas would be revegetated to help improve drainage and reduce erosion. Because these impacts are minor and adverse in the short-term, and beneficial in the long-term, this topic is dismissed from further analysis.

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.

Because there are no wetlands in the project areas, 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,* will 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 areas for the proposed projects are not within a 100-year floodplain; therefore, a statement of findings for floodplains will not be prepared and this topic has been dismissed from further analysis.

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.

The National Historic Preservation Act Section 106 Finding of Effect for both the monument entrance and Alamo Canyon Road realignments is 'No Adverse Effect' (Gibson 2011). The Alamo Canyon entrance road realignment was surveyed for cultural resources on 05/12/2010 at which time several isolated artifacts were collected within the planned APE (ORPI Cultural Resources Rpt. No. ORPI 2009G). The northern entrance sign job location was surveyed by Allen Dart et al. and reported in 2008 "Cultural Resources Survey of a 24.9 Mile Long by 82 Foot Wide Fiber Optic Corridor along the West Side of State Route 85 and in Organ Pipe Cactus National Monument South of Why in Pima County, Arizona: SHPO Project No. SHPO-2007-1635(34360), ASLD Application Number 18-53777." The Dart et al. survey was negative for cultural resources within the present planned APE. The overall project finding of effect is No Adverse Effect due to both APEs being in proximity to State Route 85, which is considered

eligible to the State Historic Highway System. The work will not constitute any notable impact to the state highway, other than improve safety of passersby, and the historic route alignment will not be changed. The proposed project areas are not expected to contain archeological deposits; however, an archeologist will monitor ground disturbance during construction since the APE is within an area of high probability for cultural resources, and appropriate steps will be taken to protect any archeological resources that are inadvertently discovered during construction. Because the projects would not disturb any known archeological sites, the effect of the projects on archeological resources is expected to be negligible. Because these effects are minor or less in degree, 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.

In consultation with Native American tribes, it has been determined that ethnographic resources are not known to exist in the proposed project areas. Native American tribes traditionally associated with the monument were apprised of the proposed project in a letter dated May 25, 2010, and one response was received from these tribes. This response confirmed the tribe's cultural affiliations with the area, but indicated that no impacts to significant ethnographic resources are expected. Because these effects are minor or less in degree, this topic is dismissed from further analysis in this document.

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. A cultural landscape inventory has not been conducted for the project areas. The proposed, small scale construction projects would not substantially alter the landscape or preclude these areas from being designated a cultural landscape in the future. Therefore, the impacts are negligible and this impact topic has not been analyzed in detail.

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. No museum collections would be affected as a result of this proposal, and this topic has been dismissed from further analysis.

Historic Structures

The National Park Service, as steward of many of America's most important cultural resources, is charged with preserving 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, m*anagement decisions and activities throughout the National Park System must reflect awareness of the irreplaceable nature of these resources (NPS 2006). The National Park Service will protect and manage cultural

resources in its custody through effective research, planning, and stewardship and in accordance with these policies and guidelines.

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. The term "historic properties" is defined as any site, district, building, structure, or object eligible or listed in the National Register of Historic Places, which is the nation's inventory of historic places and the national repository of documentation on property types and their significance. There are no historic structures in the area of potential effect for this project and the determination is that no historic properties would be affected by this proposal (Gibson 2011). Therefore, this topic has been dismissed from further analysis.

Paleontological Resources

According to 2006 *Management Policies,* paleontological resources (fossils), including both organic and mineralized remains in body or trace form, will be protected, preserved and managed for public education, interpretation and scientific research (NPS 2006). There are no known paleontological resources within the project areas and, therefore, this topic has not been analyzed in detail.

Park Operations

The proposed projects along SR 85 are aimed at improving visitor safety and access. An indirect result of meeting those goals will be a minor, beneficial effect on park operations due to a reduced need to use park resources to respond to traffic accidents at the project locations. There may be a short-term minor and adverse impact to maintenance staff during construction. Because the effect on park operations would be minor or less, this topic is dismissed from further analysis.

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. Organ Pipe Cactus National Monument 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).

Construction activities such as hauling materials and operating heavy equipment could result in temporary increases in vehicle exhaust, emissions, and fugitive dust in the general project areas. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and localized, and would likely dissipate rapidly. Overall, the project could result in a negligible degradation of local air quality, and such effects would be temporary, lasting only as long as construction. The Class II air quality designation for Organ Pipe Cactus National Monument would not be affected by the proposal. Because there would be negligible effects on air quality, 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 proposed locations for the re-designed monument entrance parking area and new Alamo Canyon Road entrance are very near SR 85. Existing sounds in the proposed project areas are most often generated by vehicular traffic (visitors and employees entering/leaving the entrance parking area and campground, and motorists along SR 85). During construction, human-caused sounds would likely increase due to equipment noise, vehicular traffic, and construction crews. Because the areas are already affected by man-made noises, development of the new projects is not expected to appreciably increase noise levels in the long-term; any increases in noise would be temporary and would last only as long as construction. For these reasons, 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 lightscapes, which are natural resources and values that exist in the absence of human caused light (NPS 2006). The monument strives to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements. Lights from vehicles along SR 85 do detract from natural night sky conditions. However, the proposed projects are not expected to increase traffic or associated light issues. Therefore, this topic is dismissed from further analysis.

Socioeconomics

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Implementation of the proposed actions could provide a negligible beneficial impact to the economies of nearby Lukeville and Ajo, Arizona due to minimal increases in employment opportunities for the construction workforce and revenues for local businesses and governments generated from these additional construction activities and workers. Any increase in workforce and revenue would be temporary and negligible, however, lasting only as long as construction is underway. 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 action by Department of Interior (DOI) agencies be explicitly addressed in environmental documents. The Federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the U.S. 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 Alaskan Native tribes.

Indian Trust Resources do not exist at Organ Pipe; monument lands are not held in trust by the Secretary of the Interior for the benefit of American Indians. Therefore, this impact topic was dismissed from further consideration.

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 re-designed parking at the monument entrance sign and the new Alamo Canyon Road entrance would be available for use by all park visitors regardless of race or income, and the construction workforces would not be hired based on their 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 will likely affect winter precipitation patterns and amounts in the parks, 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 November of 2010, an interdisciplinary team of National Park Service employees met for the purpose of developing project alternatives. This meeting resulted in the definition of project objectives as described in the *Purpose and Need,* and a list of alternatives that could potentially meet those objectives. A total of six action alternatives and the no-action alternative were originally identified for this project. Of these, five of the action alternatives were dismissed from further consideration for various reasons, as described later in this chapter. 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, the proposed projects would not be implemented. A new parking area at the monument entrance would not be constructed, and visitors pausing at the monument sign would continue to use the existing small parking space. The Alamo Canyon Road entrance off SR 85 would remain in its current location. Motorists entering SR 85 from the campground road would continue to experience an obscured view of oncoming northbound traffic. There are no construction or maintenance costs associated with this alternative.

Alternative B – Construct New Monument Entrance Parking Area and New Alamo Canyon Road Entrance

This alternative consists of constructing a new parking area at the northern monument boundary and a new entrance to Alamo Canyon Road. The new visitor parking area at the monument's northern entrance resembles a pull-through that would provide more space for recreational vehicles and would include a walkway to facilitate safe visitor access to the monument entrance sign. At Alamo Canyon, a plan has been developed that moves the road entrance from mile marker 65.4 to the vicinity of mile marker 65.2. The following text further describes the components of alternative B:

- **Construct New Entrance Sign Parking Area** – A new pull-through parking area would be constructed on BLM land just north of the current facility at the monument's northern boundary to permit southbound motorists entering the monument safe exit from SR 85 and access to the entrance sign. Needed equipment and materials will be staged within the footprint of previously disturbed areas immediately adjacent to the project action area. The primary area of project disturbance would be approximately 415 feet (126.50 m) long and approximately 56 feet (17.07 m) wide at its widest point. The new parking design would accommodate 1-2 recreational vehicles and several cars. The design includes a 12 foot wide pullout lane with an additional 12 foot wide area of parallel spaces for car and recreational vehicle parking; a 100 foot-long, 6 foot-wide island to separate the pull-through and parking areas from the highway; and a walkway from the parking spaces that would cross a drainage and lead visitors to the entrance sign. The pull-through parking, island and walkway would be constructed in previously undisturbed areas. The majority of vegetation in the area to be developed consists of shrubs and sub-shrubs, with several hedgehog and cholla cacti. One saguaro measuring less than 1 meter in height in the development zone would be transplanted. Aggregate base would be used as substrate for the pull-through and parking area. The island would be delineated by a 4-6" high curb and would contain boulders and low

shrubs to allow good visibility between the highway and the parking area. The highway shoulder at the north end of the parking area would be improved to allow gradual access to the pull-through. A Department of Homeland Security and Border Patrol access road for SBInet Tower 216 originates in a disturbed area immediately north of the proposed new parking development, and the new parking area design would retain access to that road. A bridge with railings would be installed over the drainage between the parking area and the entrance sign for visitor safety, and the walkway would be made accessible for handicapped persons. At the south end of the new parking area, the ground would be built up to the grade of the highway. Vegetation would be restored in the current parking site at the entrance sign, and a temporary, Arizona Department of Transportation-approved barrier would be placed along the highway to prevent use of the revegetated area. New signage announcing the monument entrance would be posted along State Highway 85.

- **Construct a New Entrance Road to the Alamo Campground** – The entrance to the Alamo Campground Access road would be relocated and consequently, a new section of the road would be constructed. The new road section would approach an area north of the current road access that has much better visibility of SR85 in both directions. Construction of the new road section would disturb and area approximately 16 by 1112 feet (5 by 339 meters). The new road section would tie into the existing road as shown in Figure 3. The new road would be the same width and have a gravel surface, similar to the current road. Previously disturbed areas, including an existing parking area and a side road to an abandoned helicopter pad, would be used for staging of materials and equipment during construction. Approximately four culverts would need to be installed to facilitate adequate drainage. The road alignment and all associated construction activities would take place outside of designated wilderness. All established mitigation measures will be followed.

Figure 2 – Alternative B, Construct New Monument Entrance Parking Area

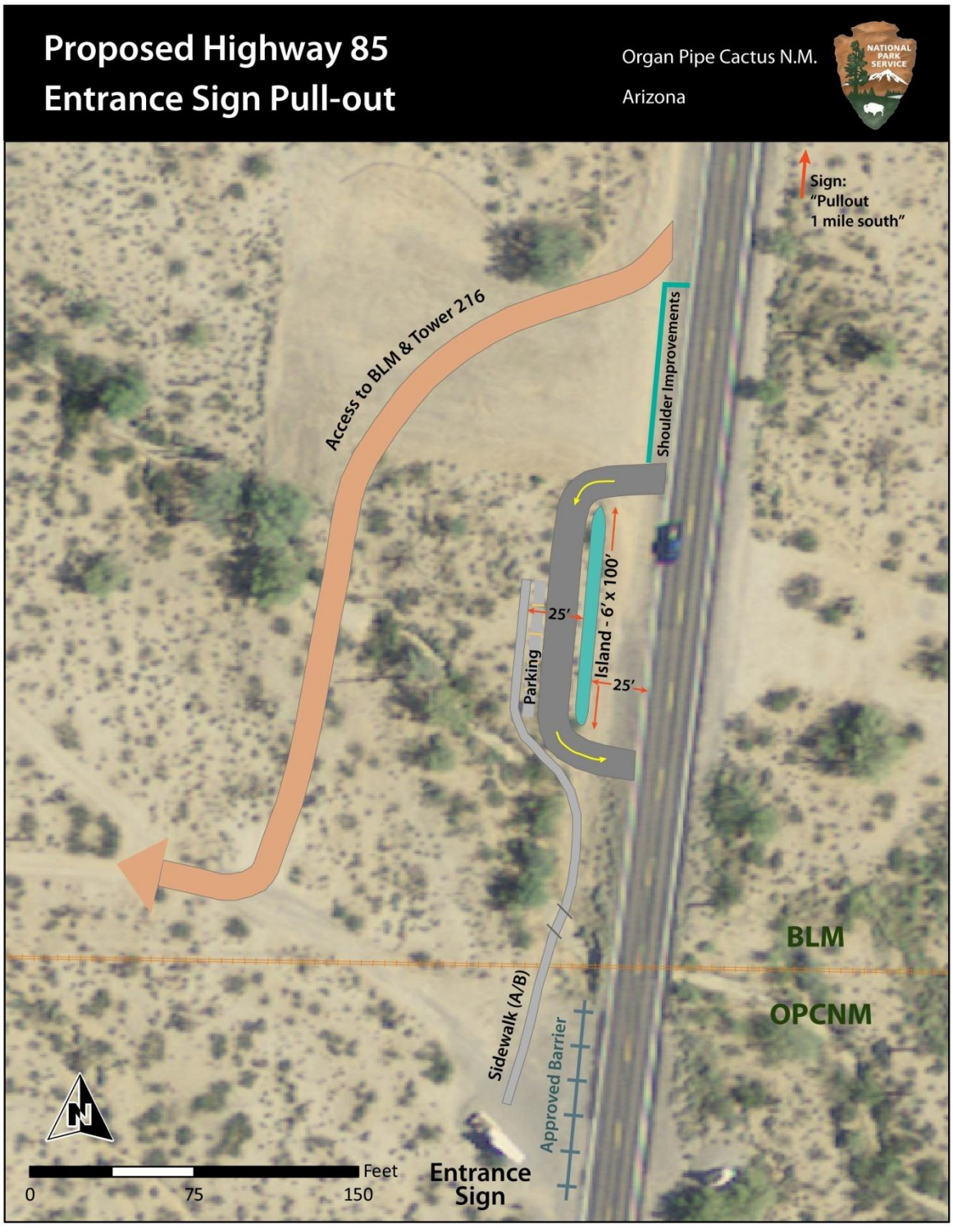
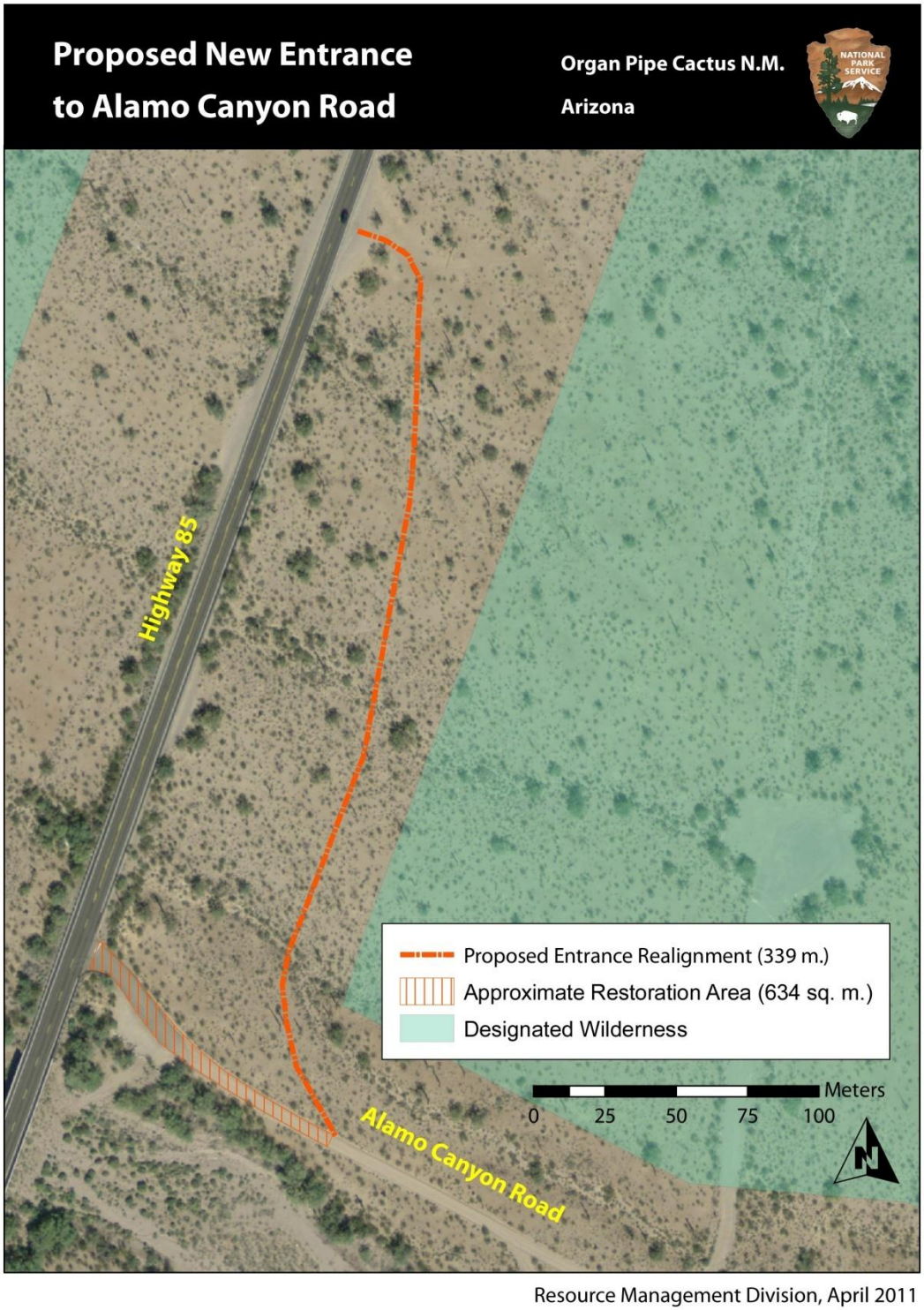


Figure 3 – Alternative B, Construct New Entrance to Alamo Canyon Road



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:

- An archeological monitor will be on-site during ground disturbing activities in Alamo Canyon, because it is in an area of many archeological sites.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the monument 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.
- To minimize the amount of ground disturbance, staging and stockpiling areas would be in previously disturbed sites.
- All equipment and materials entering the monument would be free of soil, seeds, vegetative matter, and other debris that could contain or hold seeds and have the potential to introduce or spread exotic plant species. Vehicles will be washed each time they enter the monument after having driven off paved roads.
- The perimeter of the construction zone would be demarcated with temporary fencing prior to the start of construction. The fencing would confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction stipulations and workers would be instructed to avoid conducting activities beyond the fenced zone.
- Recontouring and revegetation of disturbed areas would take place following construction and would be designed to minimize the visual intrusion of the disturbance. Restoration efforts would establish native species that tolerate the post-disturbance conditions, and to encourage future natural re-establishment of native plants and animals.
- Mature saguaros and organ pipe cacti would be avoided if practicable. Prior to construction, saguaros less than 3 meters in height and organ pipes with four or fewer arms would be salvaged by qualified personnel and transplanted to nearby areas as part of the restoration plan.
- Because disturbed soils are susceptible to erosion until revegetation takes place, erosion control measures shall consist of Best Management Practices (BMPs), such as silt fences, to minimize any potential soil erosion and storm water discharge.
- To avoid creating disturbance during Sonoran pronghorn fawning season, construction activities would not take place between March 15 and July 15.
- A staff biologist would monitor construction activities for each project. The assigned person would walk in front of heavy equipment, surveying for reptiles and their burrows, in order to detect sensitive species and move them if necessary.
- Construction crews and supervisors would be informed about special status species. Contract provisions would require the cessation of construction activities if a species were discovered in the project areas, until monument staff evaluates the situation. This

would allow modification of the contract for any protection measures deemed necessary to protect the species.

- The project construction would adhere to the AGFD recommendations regarding open trenches (Appendix A).
- Organ Pipe would review and approve a Storm Water Pollution Prevention Plan (SWPPP) for the project produced by the contractor prior to construction.
- The contractor would comply with the Water Quality Standards in Title 18, Chapter 11 of the Arizona Administrative Code as administered by the ADEQ.
- The contractor would produce and follow a spill-prevention and contingency plan and a waste management plan during the construction and cleanup phase of the project.
- A traffic control plan conforming to ADOT standards would be in place prior to construction, and appropriate traffic control measures would be applied.

Alternatives Considered and Dismissed

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

- **1999 Designs for Entrance Parking -** In 1999, three conceptual designs for potential future site development of the northern entrance of the monument were drawn up. These designs provided for a deceleration lane. The designs were reviewed by the Interdisciplinary Team (IDT) to determine whether they met current project objectives. These options were dismissed, as they provided for much larger parking areas than currently needed. Further, the designs did not meet the objectives of minimizing impacts to resources and maintaining a natural-looking landscape.
- **BLM Road Entrance Parking -** The IDT developed an alternative that focused on the use of the existing BLM road and currently disturbed areas. The IDT made a site visit to assess the impacts of this alternative and determined it would detract from the natural setting of the area, especially in the vicinity of the entrance sign. Therefore, this alternative was dismissed.
- **Alamo Canyon Middle Access -** The IDT developed a proposed Alamo Canyon Road entrance approximately 290 feet north of the current entrance and 600 feet south of the preferred entrance. This alternative was discussed with the Arizona Department of Transportation and Visitor Resource Protection staff of the monument. Site assessments determined that this alternative did not adequately address the primary objective to improve human health and safety.

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 – Implement Projects
New pull-through and parking area at the monument entrance sign	The parking area at the northern boundary would not be expanded or re-designed. Safe access to the entrance sign would not be accomplished and parking would continue to be limited.	A new pull-through and parking area would be constructed at the northern boundary, including space for recreational vehicles and safe visitor access to the entrance sign.
Relocated entrance to Alamo Canyon Road	The entrance to Alamo Canyon Road would remain in its current location, and visitor safety would not be improved.	The entrance to Alamo Canyon Road would be relocated to the north to improve safety of visitors entering SR 85 from Alamo Canyon Road.
Project objectives	**Meets project objectives?**	**Meets project objectives?**
Provide for improved human health and safety for travelers along SR 85	No. The existing entrance sign parking area and Alamo Canyon Road entry do not meet standards for visitor safety. Parking at the entrance is not adequate for recreational vehicles. Visibility at the intersection of SR 85 and Alamo Canyon Road is poor.	Yes. The proposed actions at the monument entrance and Alamo Canyon Road would improve human health and safety by improving access and visibility.
Provide enhanced visitor experiences at popular monument destinations	No. The entrance sign would continue to be difficult for visitors to access due to the size and orientation of the parking area. Visitors would continue to experience difficulty seeing and accessing Alamo Canyon Road.	Yes. At the entrance sign, visitors would be able to safely and easily access adequate parking and the sign. Visitors leaving Alamo Canyon Road would have easier opportunities to enter SR 85.
Minimize impacts on resources and maintain a natural landscape	Yes. Continued use of the existing entrance parking area and the current Alamo Canyon Road entrance would not result in any natural resource disturbance or damage.	Yes. Development of a new entrance sign parking area and a new Alamo Canyon Road entrance would result in soil disturbance and loss of vegetation, but the impacts would be minimized.

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
Human Health and Safety	Minor, short- and long-term adverse effect due to continued use of inadequate parking at entrance sign and obstructed intersection of Alamo Canyon Road and SR 85	Minor to moderate, long-term, beneficial effect from improved parking design at entrance and improved visibility at Alamo Canyon Road intersection with SR 85
Visitor Use and Experience	Minor, short- and long-term, adverse effect from inadequate	Minor, long-term beneficial effect from visitors having improved access to popular visitor

	access to the entrance sign and Alamo Canyon Road	destinations. Minor, temporary, adverse effect on visitor use due to construction noise/dust.
Soil	No effect because no soil disturbance would take place	Minor, long-term, adverse effect on soil resources due to construction activities at the project sites.

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 aesthetically 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 which will 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.

The no-action alternative does not provide for improved health and safety of visitors to the monument or monument staff as addressed in the second and third criteria. While Alternative A would result in no disturbance of soil or vegetation, thus preserving the resources, it does not improve human health and safety.

Alternative B best meets the requirements of criteria two and three above as it improves safe and healthful surroundings, and reduces risks to health and safety. It minimally impacts the resources of the monument.

Alternative B is the environmentally preferred alternative because it best addresses the above six criteria. Alternative B, *Construct New Monument Entrance Parking Area and New Alamo Canyon Road Entrance,* would provide safe visitor access to popular destinations that meets health and safety standards while minimizing environmental impacts to the extent possible. The proposed developments would be constructed so as to benefit future generations of monument visitors.

No new information came forward from public scoping or consultation with other agencies to necessitate the development of any 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 will 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 will occur. Are the effects site-specific, local, regional, or even broader?
- **Duration** describes the length of time an effect will 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 Impact Scenario

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 Organ Pipe Cactus National Monument 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 monument'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:

- **Management of Invasive Plants, Ongoing**: Invasive plant populations will be reduced or removed through mechanical (shovel or pick) or chemical means. At present, the primary targets are buffelgrass and fountain grass, although target species may change in the future.
- **Fiber Optic Cable, 2009**: A fiber optic cable was installed by Table Top Telephone Company along SR 85 from Why, Arizona to monument headquarters. Installation required clearing roadside vegetation, trenching, and boring.
- **Slip Line ADOT Culverts on SR 85, 2009**: Four existing culverts along Route 85 were proposed for slip-lining. This project was done in cooperation with ADOT. The shoulder was widened by about three feet.
- **SBInet Tower 216, 2010**: The Department of Homeland Security completed an environmental assessment for the construction of seven towers within the boundary of Organ Pipe Cactus National Monument. Tower 216 has been constructed near the monument entrance sign, and the Border Patrol has built an access road to the tower on BLM land immediately adjacent to the entrance parking area. Tower 216 will be maintained by the Department of Homeland Security.
- **Kuakatch Wash Berm Repair, 2011**: A portion of the berm at Kuakatch Wash that was washed out in a rain event will be repaired. There will be no ground disturbance outside the channel, and disturbance inside the wash will be minimal.
- **Border Patrol Horse Trailer Pull-out, 2011**: A Border Patrol horse trailer pull-out will be constructed at mile marker 70.2 along SR 85. A staging area already exists at the site, and less than 1 acre will be disturbed.

Human Health and Safety

Intensity Level Definitions

The methodology used for assessing impacts on human health and safety is based on how the new projects along SR 85 would affect visitor safety, particularly with regard to two popular visitor destinations. The thresholds for this impact assessment are as follows:

Negligible: Human health and safety would not be affected, or the effect would be at or below the lower levels of detection. The proposed projects would not have an appreciable effect on human health and safety.

Minor: The effect would be detectable, but would be of a magnitude that would not have an appreciable adverse or beneficial impact on human health and safety. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.

Moderate: The effects would be readily apparent and would result in a substantial adverse or beneficial change in human health and safety in a manner noticeable to staff and the public. Mitigation measures would likely be necessary to offset adverse effects and would likely be successful.

Major: The effects would be readily apparent and would result in a substantial adverse or beneficial change in human health and safety in a manner noticeable to staff and the public,

and be markedly different from existing conditions. Mitigation measures to offset adverse effects would be necessary, could be expensive, and their success could not be guaranteed.

Impacts of Alternative A (No-Action Alternative)

Under the no-action alternative, the monument entrance sign area and the turn-off to Alamo Canyon Road would remain unchanged. Safety of vehicles stopping at the northern entrance sign would not be improved. Visitors and staff accessing the Alamo Canyon Road would continue to have limited visibility of oncoming traffic to the south of the current access point. The lack of safety improvements would have a minor, adverse effect for the short and long term on visitor health and safety.

Cumulative Effects**:** The projects listed above have a minimal impact on human health and safety. The minor adverse impact of the no-action alternative would not add measurably to the cumulative effects. Cumulatively, these projects have a negligible impact on human health and safety when considered with past, present and reasonably foreseeable future actions.

Conclusion: The no-action alternative would result in minor adverse effects on human health and safety because the entrance sign parking area would remain small and difficult to access, and motorists turning onto SR 85 from Alamo Canyon Road would continue to experience poor visibility when entering the highway. Cumulative effects from this alternative would be negligible.

Impacts of Alternative B (Preferred Alternative)

Implementation of the preferred alternative would have a long-term, minor to moderate beneficial effect on human health and safety by creating safe parking opportunities at the monument entrance sign and re-routing Alamo Canyon Road. Under the preferred alternative, a pull-through area with parallel parking spaces for cars and recreational vehicles would be constructed at the monument entrance sign. The change would provide a means for motorists to pull off SR 85 safely, and would afford recreational vehicle drivers ample space to park off the highway rather than parking on the highway shoulder or trying to pull into an inadequately sized parking area.

At Alamo Canyon Road, visitors would enter SR 85 further north than the current intersection, and would have greatly improved visibility to the south along SR 85. An unimpeded view to the south along SR 85 would improve safety for visitors turning onto the highway.

Park staff from all disciplines: maintenance, resources, interpretation, law enforcement as well as park cooperators; have commented on the need to improve these areas as a preventative measure and to enhance visitor safety. Consequently, there is no way to quantify the benefits from these improvements. The estimate of the benefits is qualitative from staff experience when accessing these sites.

Cumulative Effects: Most of the projects listed in the cumulative impact scenario section of this chapter would have some effect on human health and safety. In particular, repairing the diversion berm in Kuakatch Wash and constructing a new border patrol horse trailer pull-out, would have minor to moderate, long-term beneficial impacts on human health and safety along SR 85. New turning and parking facilities at the monument entrance sign, and a re-aligned Alamo Canyon Road entrance, would also result in long-term, minor to moderate improvements in human health and safety. Cumulatively, there would be a minor beneficial effect on human

health and safety when the current action is considered with other past, present and reasonably foreseeable future actions.

Conclusion: Under the preferred alternative, there would be minor to moderate beneficial effects on human health and safety because there would be better-designed access and parking at the monument entrance sign, and improved access to and from SR 85 at Alamo Canyon Road. The short term effects of the implementation of alternative B on human health and safety will be minor averse and correspondingly appropriate health and safety mitigation measures will be implemented during construction. Cumulatively, there would be a beneficial effect on human health and safety when this action is considered with other past, present and reasonably foreseeable future actions.

Visitor Use and Experience

Intensity Level Definitions

The methodology used for assessing impacts on visitor use and experience is based on how new facilities would affect the visitor, particularly with regard to access to popular monument destinations. 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.

Impacts of Alternative A (No-Action Alternative)

The no-action alternative would have minor, adverse, short- and long-term effects on visitor use and experience, specifically at these two popular visitor destinations: the monument entrance sign and Alamo Canyon Campground. In its current form, the monument entrance sign parking area does not allow visitors easy or safe access, nor does it provide sufficient parking for more than 1 or 2 cars. If a recreational vehicle pulls into the parking area, it often blocks visitors' view of the entrance sign and makes it difficult or impossible for visitors to get photographs. Alamo Canyon Road intersects SR 85 in a location with poor visibility, and it is difficult for motorists to see and access the turn-off onto Alamo Canyon Road.

Cumulative Effects: Many projects that occur in the monument have some effect on visitor experience, including some of the actions listed in the cumulative scenario section in the introduction to this chapter. The no-action alternative would have a minor, short- and long-term adverse effect on visitor experience because access to two popular visitor destinations would not be improved. The cumulative impacts from recent and ongoing projects on the visitor experience, when considered with the no-action alternative, are minor.

Conclusion: The no-action alternative would result in minor, adverse, short- and long-term effects on the visitor experience. Visitors stopping at the northern entrance sign would continue to be confronted with inadequate parking and difficulty in turning off the highway. At Alamo Canyon, visitors would have the challenge of finding the turn-off from SR 85, and re-entering the highway from a point with limited visibility. Cumulatively, this alternative would have minor adverse effects on visitor use and experience when considered with other past, present and reasonably foreseeable future actions.

Impacts of Alternative B (Preferred Alternative)

The proposed action would improve access to the monument entrance sign and Alamo Canyon Campground, which are two popular visitor destinations. A pull-through lane with ample parking for both cars and recreational vehicles at the monument entrance would facilitate visitor access to the sign. Re-alignment of the entrance to Alamo Canyon Road to a more visible site would facilitate visitor access. During construction, visitors may have somewhat limited access to the monument entrance sign. At Alamo Canyon Campground, visitors may temporarily experience more than the typical noise and a decrease in air quality due to the operation of heavy machinery. Construction activities would have a short-term, minor, adverse effect on visitor experience. In the long-term, it is expected that more visitors would stop at the entrance for photographs to add to their collections when they see the designated pull-off. While it isn't possible to quantify the level of improved visitor satisfaction, it is expected that improved safety of pulling off and onto the highway would be a more positive experience for the visitor's when accessing these sites. Implementation of the preferred alternative would have a minor, long-term, beneficial effect on visitor use and experience.

Cumulative Effects: As described under Alternative A, any construction activities have the potential to affect visitor use and experience. Many of the actions listed in the cumulative scenario section in the introduction to this chapter would have some degree of effect on visitor use and experience. In particular, SBInet Tower 216 and the border patrol horse trailer pull out are visible to visitors and may detract from the natural landscape. The treatment of invasive plant species may temporarily detract from visitor experience if workers use motorized sprayers or marker dye, but would improve the visitor experience in the long-term. New parking facilities at the entrance sign and a re-located entrance to Alamo Canyon Road would have a long-term, minor to moderate, beneficial effect on visitor experience by improving access to these popular visitor sites. Cumulatively, there would be a minor beneficial effect on visitor use and experience when this alternative is considered with other past, present and reasonably foreseeable future actions.

Conclusion: Under the preferred alternative, there would be minor beneficial long-term effects on visitor use and experience because access to prominent visitor destinations would be enhanced. In the short-term, the effects would be minor and adverse due to limited access during construction. Cumulatively, this alternative would have a minor beneficial effect on visitor use and experience, when considered with other past, present and reasonably foreseeable future actions.

Soil

Intensity Level Definitions

The methodology used for assessing impacts on soil is based on how and to what degree construction activities would affect soil resources at the entrance sign and Alamo Canyon Road entrance, especially along the proposed route for the new roadway section. The thresholds for this impact assessment are as follows:

Negligible: Soils would not be affected, or the impacts on soils would be below or at the lower levels of detection. Any effects on soil productivity or fertility would be slight and no long-term impacts would occur.

Minor: Impacts on soils would be slight but detectable. Effects on soil productivity or fertility would be small, as would the area affected. If mitigation was needed to offset adverse impacts, it would be relatively simple to implement and would likely be successful.

Moderate: Impact on soil productivity or fertility would be readily apparent, likely long-term, and result in a change to the soil character over a relatively wide area. Mitigation measures would probably be necessary to offset adverse impacts and would likely be successful.

Major: Impact on soil productivity or fertility would be readily apparent, long-term, and would substantially change the character of the soils over a large area in and out of the monument. Mitigation measures to offset adverse impacts would be necessary and extensive, and their success could not be guaranteed.

Impacts of Alternative A (No-Action Alternative)

Under the no-action alternative, there would be no project-related ground disturbance with the potential to affect soils. There would be no change in current condition of soils, including rate of runoff or permeability, as a result of implementing this alternative.

Cumulative Effects: Any construction activities have the potential to affect soils. Fiber optic cable installation, invasive species treatments, Kuakatch Wash berm restoration, the construction of SBInet Tower 216, the horse trailer pull-out along SR 85, and slip lining the culverts all have soil disturbance associated with their implementation. The cumulative effects of recent and ongoing projects and the no-action alternative have minor adverse impacts on soil.

Conclusion: The no-action alternative would result in no impacts on soils in the project areas because no construction activities would be conducted. As such, this alternative would not contribute to any cumulative disturbance of soil when considered with impacts to soils from recent and ongoing projects.

Impacts of Alternative B (Preferred Alternative)

Implementation of the preferred alternative would have a short- and long-term, minor, adverse effect on soil resources in the project areas. A disturbed area north of the monument entrance sign would be incorporated into the new design, and new ground disturbance would be minimal at that location. The total entrance sign project footprint would be approximately 0.53 acres in size. Approximately 0.37 acres would be affected on the new Alamo Canyon Road route. Once the areas are cleared of vegetation, aggregate base would be put down, and this may reduce soil permeability and increase runoff. Proposed site preparation and construction activities, including grading, clearing and excavating, could potentially increase erosion and sediment transport, as well as causing soil compaction.

Cumulative Effects: Any construction activities that require clearing or grading have the potential to affect soil resources. Invasive species treatments, Kuakatch Wash berm restoration, the construction of SBInet Tower 216, the horse trailer pull-out along SR 85, and slip lining culverts on SR 85 all have minor soil disturbance associated with their implementation. Impacts resulting from the preferred alternative are expected to have a minor to moderate adverse effect on soil resources in the project areas. Cumulatively, the proposed actions would contribute a minor amount of disturbance to soil resources when considered with other past, present and reasonably foreseeable future actions.

Conclusion: The preferred alternative would have long-term, minor, adverse effects on soil resources in the project areas as a result of site preparation and construction activities. The disturbance at the monument entrance sign would be minor due to use of previously cleared areas in the new parking design. At Alamo Canyon Road, clearing of vegetation and grading the new roadway would have minor to moderate effects on soil. Cumulatively, this alternative would contribute a minor amount of soil disturbance 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 Organ Pipe Cactus National Monument. Interdisciplinary team members first met in November 2010 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 proposed construction areas. The results of these evaluations are documented in this environmental assessment.

External Scoping

External scoping was conducted to inform the public about the proposal to re-configure parking at the monument entrance sign and re-locate the entrance to Alamo Canyon Road at Organ Pipe Cactus National Monument and to generate input on the preparation of this environmental assessment. A scoping letter, dated May 25, 2010, was mailed to 26 area residents, agencies, news organizations, congressional and tribal representatives. The scoping letter was sent to a total of 9 affiliated tribes, for further information please see the Native American Consultation section below. The Arizona Department of Environmental Quality responded, asking that all relevant regulations be adhered to.

Agency Consultation

In accordance with the Endangered Species Act, the National Park Service contacted the U.S. Fish and Wildlife Service with regard to federally listed special status species, and in accordance with National Park Service policy, the monument also contacted the Arizona Game and Fish Department with regard to state-listed species. Both agencies were notified of the proposed project via scoping letters dated May 25, 2010 and both will be notified when the EA is available for public review and comment. Because the NPS determined that there would be *no effect* on federally or state-listed species, no formalized consultation was required.

An NHPA section 106 report has been prepared highlighting the park's "No Adverse Effect" finding regarding the proposed actions. The report highlights that the project qualifies for streamlining under the 2008 SHPO Programmatic Agreement, specifically under: Criterion 2 - rehabilitation and or minor relocation of existing trails, walks, paths and sidewalks; Criterion 3 – repair/resurfacing/removal of existing roads, trials and parking areas; and especially under Criterion 4 – health and safety activities. This report will be provided to the State Historic Preservation Office in the next batch shipment of reports.

Native American Consultation

A tribal scoping letter was sent to nine representatives of four monument affiliated tribes to determine if there were any ethnographic resources in the project areas and whether the tribes wanted to be involved in the environmental compliance process. Tribal entities contacted include:

- Gila River Indian Community
- Salt River Pima-Maricopa Indian Community
- Tohono O'odham Nation
- Hopi Nation

One of these tribes, the Hopi Nation, responded during the 30-day scoping period. The Nation affirmed its affiliation with the project area and stated that they do not anticipate impacts to Native American sites or resources. The Hopi Nation had no objection to the proposed project, and requested to be kept informed of the project's progress, including immediate notification if Native American artifacts are discovered during construction.

Environmental Assessment Review and List of Recipients

The environmental assessment will be released for public review in 2011. To inform the public of the availability of the environmental assessment, the National Park Service will 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 will be provided to interested individuals, upon request. Copies of the document will also be available for review at the monument's visitor center and on the internet at http://parkplanning.nps.gov/orpi.

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 will be reviewed and analyzed, prior to the release of a decision document. The National Park Service will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the environmental assessment, as needed.

List of Preparers

The following persons assisted with the preparation of the environmental assessment:

- Mark Sturm, Resource Management Chief, M.S. wildlife biology and management, reviewed documents and provided input on the level of impacts
- Connie Gibson, R.P.A. Archaeologist, M.A. Anthropology with an Archeology Concentration, conducted archaeological surveys and provided input on the level of impacts to cultural resources
- Peter Holm, Ecologist, Ph.D. ecology, reviewed documents and provided input on the level of impacts
- Tim Tibbits, Wildlife Biologist, B.S wildlife biology, reviewed documents, prepared the wildlife impacts, and provided input on the level of impacts
- Ami Pate, Biological Technician, B.A. English, prepared maps
- Christine Hannum, Biological Science Technician, B.S. wildlife science, wrote the EA and provided input on the level of impacts
- Michele Girard, SOAR Ecologist, Ph.D., botany, reviewed documents and provided input on the level of impacts

REFERENCES

Gibson, Connie Thompson

2011 A Class III Intensive Archeological Survey of Two Projects to Improve Visitor Safety along State Route 85: Relocation of the Alamo Canyon Campground Entrance Road and Pullout at the Northern Entrance Sign, Organ Pipe Cactus National Monument, Pima County, Arizona.

NPS 2006 *NPS Management Policies*. National Park Service, U.S. Department of the Interior, December 2006.

NPS 1998 General Management Plan. Organ Pipe Cactus National Monument, 1998.

NRCS 2011 Custom Soil Resource Report for Organ Pipe Cactus National Monument. U.S. Department of Agriculture, Natural Resources Conservation Service. January 2011.

Rutman 1997 *History of the "Ajo-Sonoyta Highway"*. Draft Report prepared by Sue Rutman, Botanist, Organ Pipe Cactus National Monument. April 1997.

APPENDIX A – IMPAIRMENT

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 an impairment, but an impact would be more likely to constitute an 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.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;

- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

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. The NPS's threshold for considering whether there could be an impairment is based on whether an action would have major (or significant) effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relates back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, the topic remaining to be evaluated for impairment is soils.

Fundamental resources and values for Organ Pipe Cactus National Monument are identified in the General Management Plan. According to that document, of the impact topics carried forward in this environmental assessment, only soil resources are considered necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; are key to the natural or cultural integrity of the park; and/or are identified as a goal in the park's General Management Plan or other relevant NPS planning document.

Soil – Organ Pipe Cactus National Monument was established to protect a representative part of the Sonoran Desert that contains organ pipe cactus (*Stenocereus thurberi*). Organ Pipe relies on its soil resource for the growth and health of the organ pipe cactus, as well as other unique Sonoran Desert vegetation. This project involves construction activities, such as compaction, trampling and sediment transport, that would result in minor to moderate, adverse impacts to the soil resource at two popular visitor destinations in the monument. Although soil is a fundamental resource at the monument, the preferred alternative will result in only minor to moderate, long-term, site-specific adverse impacts to soils. Therefore, there would be no impairment to soil resources.

In addition, mitigation measures would further lessen the degree of impact to, and help promote the protection of, these resources. To preserve the soil resource, areas for staging and stockpiling of materials and equipment would be in previously disturbed sites. The perimeter of the construction zones would also be demarcated with temporary fencing so that activity would be confined to the minimum area needed for construction. Further, erosion control measures would follow Best Management Practices (BMPs), such as the use of silt fences, to minimize potential soil erosion and storm water discharges.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there would be no impairment of park resources and values from implementation of the preferred alternative.