



National Park Service
U.S. Department of the Interior
Saguaro National Park
Pima County, Arizona

El Paso Natural Gas Company Line No. 1008 Replacement Environmental Assessment

September 2010



EL PASO NATURAL GAS COMPANY LINE NO. 1008 REPLACEMENT

ENVIRONMENTAL ASSESSMENT

Summary

El Paso Natural Gas Company (EPNG) operates two high-pressure natural gas pipelines (Line No. 1007 and Line No. 1008) in the Tucson Mountain District of Saguaro National Park (Park), west of the city of Tucson, Pima County, Arizona. The lines are located in an existing 30-foot-wide right-of-way (ROW). During normal inspections, conducted pursuant to and in accordance with federal law, EPNG discovered several locations within and immediately adjacent to the Park where Line No. 1008 has been exposed as the result of stormwater runoff. EPNG proposes to repair the existing pipe or remove and replace the existing pipe with new pipe at these locations. Approximately 700 feet of Line No. 1008 would be affected by the project. New pipe segments would be lowered to a depth sufficient to prevent future scouring. Fill dirt would be added where necessary to adequately cover the pipe, and the dirt would be compacted and graded. Water bars would be added to improve drainage and prevent future washouts. The disturbed areas would be restored and revegetated to industry and Park standards. EPNG will contact and coordinate with Park personnel to complete a restoration and revegetation plan, in accordance with Park specific standard mitigation measures. All work would be done in accordance with federal standards.

This environmental assessment (EA) evaluates two alternatives; a No Action Alternative and an Action Alternative. The No Action Alternative is used as a baseline assessment. The Action Alternative addresses the repair of Line No. 1008, as described above.

The EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates potential issues and impacts to resources and values at the Park, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics that have been addressed in detail in the EA, because the resultant impacts may be more than minor, include geological resources, stream flow characteristics, soils, vegetation (including non-native species), archaeological resources, and species of special concern. All other resource topics have been dismissed because the project would result in negligible or minor effects to those resources. No major effects are anticipated as a result of this project.

Public scoping was conducted to assist with the development of this document and a total of three public comment letters were received. Two of the three responders agreed with the need to repair the pipeline exposures and no responders expressed opposition to the project. A summary of issues raised by responders is included in the Consultation and Coordination section of this document.

Public Comment

If you wish to comment on the EA, you may enter your comments online at the National Park Service Planning, Environment, and Public Comment website (<http://parkplanning.nps.gov/>) or you may mail comments to the name and address below. The EA will be on public review for 30 days ending October 17, 2010. Our practice is to make available for public review all comments, including names, home addresses, home phone numbers, and email addresses of respondents. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this

information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make available for public inspection submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses.

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Chapter 1

PURPOSE AND NEED

Introduction

Saguaro National Park (Park) was authorized by presidential proclamation in 1933 to preserve and protect the exceptional growth of cacti, including the saguaro cactus (*Carnegiea gigantea*). The Park is located in southern Arizona adjacent to the city of Tucson and is composed of the Rincon Mountain District (RMD) and the Tucson Mountain District (TMD). Boundary expansions occurred in 1961, 1976, 1991, and 1994. The last one changed the name from Saguaro National Monument to Saguaro National Park and incorporated the land where El Paso Natural Gas Company had an existing pipeline ROW inside the park boundary.

El Paso Natural Gas Company (EPNG) operates two high-pressure natural gas pipelines (Line No. 1007 and Line No. 1008) buried in a 30-foot-wide right-of-way (ROW) in the northeastern portion of the TMD. During normal inspections, conducted pursuant to and in accordance with federal law, EPNG discovered several locations within and immediately adjacent to the Park where Line No. 1008 has been exposed as the result of stormwater runoff. EPNG proposes to repair the existing pipe or remove and replace the existing pipe with new pipe at these locations. New or repaired pipe segments would be lowered to a depth sufficient to prevent future scouring. Fill dirt would be added where necessary to adequately cover the pipe, and the dirt would be compacted and graded. Water bars would be added to improve drainage and prevent future washouts. The disturbed areas would be restored and revegetated to industry and Park standards. EPNG will contact and coordinate with Park personnel to complete a restoration and revegetation plan, in accordance with Park specific standard mitigation measures. All work would be done in accordance with federal standards.

The purpose of this environmental assessment (EA) is to examine the environmental impacts associated with EPNG Line No. 1008 repairs and improvements in Saguaro National Park TMD. The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1508.9), and the National Park Service (NPS) Director's Order DO-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-making*).

Purpose and Need

The proposal would ensure the integrity of EPNG Line No. 1008 in the TMD of Saguaro National Park. The pipeline is currently exposed due to soil erosion at several locations, where it is now susceptible to corrosion and line strikes. Because the pipeline contains flammable natural gas at pressures up to 650 pounds per square inch, the increased potential for pipeline rupture constitutes a serious risk to the safety of park visitors and the general public, and to the reliability of natural gas delivery to EPNG customers in the region. The project purpose and need is to repair the existing pipe, or remove and replace the existing pipe with new pipe, at these locations to ensure the safety of the public and compliance in accordance with the Natural Gas Act of 2006.

Based on the purpose and need of the project, the objectives for the proposal are to:

1) improve public safety, 2) reduce erosion, and 3) contribute to the protection of Park resources.

Purpose and Significance of the Park

Saguaro National Park contains natural and cultural resources that are representative of the Sonoran Desert in southern Arizona. The RMD was established as a National Monument by presidential proclamation (No. 2032) on March 1, 1933. This proclamation states that the purpose of “reserving [the] land...as a national monument” was to preserve and protect “...the exceptional growth thereon of various species of cacti, including the so-called giant [saguaro] cactus.” On November 15, 1961, Presidential Proclamation No. 3439 added to the Monument lands in the TMD. A first enlargement of the TMD occurred on October 21, 1976 (Public Law [PL] 94-578). Preservation of wilderness values was legislatively mandated on October 20, 1976 (PL 94-576), when 13,470 acres in the TMD and 57,930 acres in the RMD were formally designated as wilderness in accordance with the provisions of the Wilderness Act. In 1991, PL 102-61 expanded the boundaries of the RMD to include lands in the Rincon Valley. In 1994, legislation (PL 103-364) was signed into law that enlarged the boundaries of the Monument and changed Saguaro from a national monument to a national park. Saguaro National Park is currently 91,446 acres. The significance of the Park lies in the rich biological diversity of the Sonoran Desert within a framework of historic and prehistoric human occupation. Park management must assure that these natural and cultural resources are managed in such a manner as would leave them unimpaired for the enjoyment of future generations. The Park’s purpose statements (NPS 2003) include:

- Preserve and protect the saguaro cactus and the diverse vegetation and wildlife habitat of the surrounding Sonoran Desert.
- Preserve and protect the mountain and riparian habitats associated with the Sonoran Desert in the Tucson and Rincon Mountains.
- Preserve and protect wilderness qualities such as solitude, natural quiet, scenic vistas, and natural conditions.
- Promote understanding and stewardship of the Park’s natural and cultural resources through appropriate scientific study.
- Provide opportunities to understand and enjoy the Park in a manner that is compatible with the preservation of park resources and wilderness character.

Relationship to Other Plans and Policies

National Park Service Management Policies

The NPS Management Policies (NPS 2006) provide further interpretation and policy guidance to laws, proclamations, executive orders, regulations, and special directives, including the NPS enabling legislation. The visitor use and special park uses management policies that provide direction to this EA include:

Nonfederally Owned Minerals. The Park Service may approve operations associated with nonfederal oil and gas interests under the standards and procedures in 36 CFR Part 9, Subpart B. If an operator’s plan fails to meet the approved standards of these regulations, the Park Service generally has the authority to deny the operation and may initiate acquisition. Absent a decision to acquire the property, application of the regulations is not intended to result in a taking of the property interest, but rather to impose reasonable regulation of the activity.

Saguaro National Park General Management Plan

A park's General Management Plan (GMP) provides a vision and policy guidance for the preservation of park resources, visitor use and experience, the types and general intensities of development, visitor carrying capacities, and opportunities to address management issues internal and external to the park. It also identifies connections among the various park programs and provides a policy framework for more site-specific planning.

A revised Draft GMP/Environmental Impact Statement (EIS) was completed in 2007 (NPS 2007) and circulated for review. The Record of Decision for the current General Management Plan was signed on April 2, 2008 (NPS 2008). This current EA was prepared to examine the environmental and social benefits and consequences of repairing Line No. 1008 in keeping with the existing 2008 GMP.

Appropriate Use

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

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

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

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

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

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

The project objectives are to ensure park visitor safety, to reduce erosion, and to protect park resources while allowing for continued safe operation of an existing natural gas pipeline. Proper construction methods and mitigation measures would ensure that impacts to park resources and values would be insignificant. The granting of temporary workspace to allow for the repair of an

existing high pressure natural gas pipeline, including implementing mitigation measures included in this document, is an appropriate use as it will serve the public interest.

Scoping

Scoping is a process to identify the resources that may be affected by a project proposal, and to explore possible alternative ways of achieving the proposal while minimizing adverse impacts. Saguaro National Park conducted both internal scoping with appropriate NPS staff, and external scoping with the public and interested/affected groups and agencies.

Internal scoping was conducted by EPNG, SWCA Environmental Consultants (SWCA), and an interdisciplinary team of professionals from the Park at Park headquarters on September 11, 2009 to discuss the purpose and need for the project; possible alternatives; potential environmental impacts; past, present, and reasonably foreseeable future projects that may have cumulative effects; and possible mitigation measures.

External scoping was initiated on April 15, 2010 with the distribution of a scoping letter, a news release, and an internet posting to inform the public, stakeholders, and agencies of the proposal to lower EPNG Line No. 1008 and install erosion control measures, and to generate input on the preparation of this EA. During the 30-day scoping period, three responses were received. More information regarding scoping can be found in *Consultation and Coordination*.

Impact Topics Retained for Further Analysis

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders; NPS *2006 Management Policies*; and NPS knowledge of resources at the Park. Impact topics that are carried forward for further analysis in this EA are listed below along with the reasons why the impact topic is further analyzed. For each of these topics, *Chapter 3 – Affected Environment* 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 *Chapter 4 – Environmental Consequences*.

Geological Resources—Soils

According to NPS Soil Resource Management Policy (NPS 2006: page 56), the NPS “will actively seek to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources. When soil excavation is an unavoidable part of an approved facility development project, the Service will minimize soil excavation, erosion, and off-site soil migration during and after the development activity.”

There would be soil disturbance from construction activities of the repair of Line No. 1008. Therefore, impacts to the soil resource will be analyzed in detail.

Water Resources—Waters of the U.S./Stream Flow Characteristics

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

Executive Order 11990 *Protection of Wetlands* requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the CWA authorizes the USACE to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation within waters of the U.S. NPS policies for wetlands as stated in *2001 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.

Four ephemeral drainage features in the project area were identified as potential waters of the U.S. Therefore, impacts to water resources will be analyzed in detail.

Native Vegetation

In accordance with the NPS's *2006 Management Policies*, the NPS 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 project area is in a region described as the Arizona Upland subdivision of the Sonoran Desertscrub biotic community, where the geography, elevation and climate (specifically the bimodal rainfall pattern) promote a greater structural diversity of life forms and vegetation communities than those found in surrounding southwestern deserts; e.g., the Mojave, Chihuahuan, or Great Basin deserts. In comparison to these other deserts, which are mainly dominated by low shrubs, Sonoran Desertscrub displays more diverse arboreal elements, including a great variety of succulents, including large cacti (Turner and Brown 1994).

Native vegetation would be disturbed and removed during construction and would be rehabilitated as part of this proposal. In addition, some rehabilitation will occur in the previously disturbed ROW. Therefore, impacts to vegetation will be analyzed in this EA.

Species of Special Concern/Unique or Important Wildlife or Wildlife Habitat

The Endangered Species Act of 1973 (ESA) requires examination of impacts on all federally listed threatened, endangered, and candidate species. Section 7 of the ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (or designated representative) 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, NPS Biological Resource Management Policy (NPS 2006) and Director's Order 77 *Natural Resources Management Guidelines* require the NPS to examine the impacts on federal candidate species, as well as state and locally listed species, and other native species that are of special management concern to parks (including rare, declining, sensitive, or unique species and their habitats).

The Migratory Bird Treaty Act, 16 USC Sections 703–707, prohibits any “take” of migratory birds. The definition of take includes the killing, possessing, or collecting of migratory birds. Migratory birds are listed in the CFR Part 50, §10.13.

In accordance with these laws and policies, a biological evaluation (BE) was completed in 2009 (SWCA 2009a). Four special status species have the potential to occur in the project area or vicinity. Therefore, species of special concern will be analyzed in this EA.

Non-native Species

In accordance with NPS Definition of Native and Exotic Species (NPS 2006; page 43), “native species are defined as all species that have occurred, now occur, or may occur as a result of natural processes on lands designated as units of the national park system. Native species in a place are evolving in concert with each other. Exotic species are those species that occupy or could occupy

park lands directly or indirectly as the result of deliberate or accidental human activities. Exotic species are also commonly referred to as non-native, alien, or invasive species. Because an exotic species did not evolve in concert with the species native to the place, the exotic species is not a natural component of the natural ecosystem at that place.”

Executive Order #13112 (Invasive Species) was signed in 1999, “to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.” Of the non-native invasive plant species found in the Tucson area, two perennial bunch grasses are of specific concern within Saguaro National Park: buffelgrass (*Pennisetum ciliare*) and fountain grass (*Pennisetum setaceum*). These plants impact ecosystem structure by crowding out native plants, and alter ecosystem function such as nutrient cycling, hydrology, and most importantly, fire regime. They are believed to fuel larger and more frequent wildfires; the Arizona Upland is not a fire-adapted vegetation community, with high post-fire mortality to some of the community’s most important species, the saguaro, foothill paloverde, and desert ironwood (*Olneya tesota*). Neither of these species, or any other listed non-native species, were observed in the project area during completion of a biological evaluation in 2009 (SWCA 2009a).

Construction activities have been known to introduce non-native species into parks and non-native species thrive in disturbed areas. Vegetation would be disturbed by heavy equipment during project construction and there is potential for non-native invasive plant species to be introduced into the project area. Therefore, non-native species will be analyzed in this EA.

Recreation Resources—Trail Routes and Visitor Use and/or Experience

According to NPS 2006 *Management Policies*, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units. The NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks, and would maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of society. Further, the NPS would provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. Also in accordance with NPS 2006 *Management Policies*, policy states that the NPS and its concessionaires, contractors, and cooperators would seek to provide a safe and healthful environment for visitors as well as employees.

Saguaro National Park recorded a total of 699,137 recreational visits in 2008. Visitation peaked at 828,000 visitors in 1993 (NPS 2007). The recent decline in visitation corresponds to a similar decline in visitation to other Arizona national parks and monuments in recent years. Popular recreational activities at the Park include auto touring, bird watching, hiking, nature walks, and wildlife viewing. Rangers also offer a number of educational programs to enhance visitor understanding and appreciation of the park. The TMD offers ranger-guided nature walks, self-guided nature walks, and a number of education and outreach programs. There are also a variety of exhibits, educational brochures, and books available at the Red Hills Visitor Center. According to the 2003–2004 visitor survey, the majority of visitors and neighbors in the TMD went hiking or walking, followed by scenic driving. Similar to the RMD, TMD neighbors represented the largest percentage of horseback riding, bicycling, and running activities (NPS 2007).

The proposed action to repair Line No.1008 could result in impacts to potential future visitor use of this area as a proposed trail for access to surrounding public lands; therefore this topic has been carried forward in the analysis.

Archaeological Resources

The NPS, as steward of many of the nation's most important cultural resources, is charged to preserve cultural resources for the enjoyment of present and future generations. Management decisions and activities throughout the National Park System must reflect awareness of the irreplaceable nature of these resources. The NPS would protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the 2006 *Management Policies* and the appropriate Director's Orders.

Section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); the NPS's Director's Order 28 *Cultural Resource Management Guideline*; and NPS 2006 *Management Policies* require the consideration of impacts on historic properties that are listed on or eligible to be listed in the National Register of Historic Places (NRHP). The NRHP is the nation's inventory of historic places and the national repository of documentation on property types and their significance. The above-mentioned policies and regulations require federal agencies to coordinate consultation with State Historic Preservation Officers (SHPO) regarding the potential effects to properties listed on or eligible for the NRHP.

In addition to the National Historic Preservation Act and the NPS 2006 *Management Policies*, the NPS's Director's Order 28A *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 the nation's heritage, the NPS 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 proposed action to repair Line No. 1008 could result in impacts to archaeological resources in the project area; therefore this topic has been carried forward in the analysis.

Impact Topics Dismissed From Further Analysis

This section provides descriptions of the Park's resources that comprise the affected environment for the impact topics not carried forward for detailed analyses in the EA. Resource topics dismissed in this section include floodplains, geohazards, air quality, soundscapes, unique ecosystems, visitor experience—aesthetic resources, cultural landscapes, ethnographic resources, museum collections, socioeconomics/land use, minority and low income populations, other agency or tribal land use plans or policies, urban quality, long-term management of resources (including park operations), wilderness, lightscapes, climate change, and energy resources. The rationale for dismissing these specific topics is stated for each resource below.

Floodplains

In accordance with NPS Water Resource Management Policy (NPS 2006), the NPS will manage for the preservation of floodplain values, minimize potentially hazardous conditions, and comply with the NPS Organic Act and all other federal laws and executive orders related to the management of activities in flood-prone areas, including Executive Order 11988. Executive Order 11988 *Floodplain Management* requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. According to Director's Order 77-2 *Floodplain Management*, certain construction activities within a 100-year floodplain require preparation of a statement of findings for floodplains.

There are no floodplains in the project area. According to Flood Insurance Rate Map No. 04019C1605, the nearest floodplain (labeled on the map as Zone A) is approximately 1,000 feet northeast of the project area. A "Zone A" floodplain is a special flood hazard area inundated by 100-year flood events with no base flood elevations determined. Because there are no floodplains in the project area itself, a statement of findings for floodplains will not be prepared, and the topic of floodplains has been dismissed from further analysis in this document.

Geohazards

In accordance with NPS Geologic Resource Management Policy (NPS 2006), the NPS is charged to preserve unimpaired naturally occurring geologic processes, which can be hazardous to humans and park infrastructure (NPS 2006). These processes include earthquakes, volcanic eruptions, mudflows, landslides, floods, shoreline processes, tsunamis, and avalanches. The NPS will work closely with specialists at the U.S. Geological Survey and elsewhere, and with local, state, tribal, and federal disaster management officials, to devise effective geologic hazard identification and management strategies. Although the magnitude and timing of future geologic hazards are difficult to forecast, park managers will strive to understand future hazards and, once the hazards are understood, minimize their potential impact on visitors, staff, and developed areas. Before interfering with natural processes that are potentially hazardous, superintendents will consider other alternatives.

This project is not located in a geologically hazardous area and would not contribute to any known geohazards at Saguaro National Park TMD; therefore, the topic of geohazards is dismissed from further analysis in this document.

Air Quality

In accordance with NPS Air Resource Management Policy (NPS 2006), the NPS has a responsibility to protect air quality under both the 1916 Organic Act and the Clean Air Act of 1963 (42 USC 7401 *et seq.*). The Clean Air Act was established to promote the public health and welfare by protecting and enhancing the nation's air quality. The act, and subsequent amendments to it, establishes specific programs that provide special protection for air resources and air quality related values associated with NPS units. Section 118 of the Clean Air Act requires a park unit to meet all federal, state, and local air pollution standards. The Park is designated as a Class I air quality area under the Clean Air Act Amendments of 1977. These amendments provide that the federal land manager of a Class I area 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.

Construction activities such as hauling materials and operating equipment could result in temporary increases of vehicle exhaust, emissions, and dust in the project area and vicinity. However, any exhaust, emissions, and dust generated from construction activities would be temporary and localized, and would likely dissipate rapidly. Dust would be controlled in accordance with Pima County regulations and requirements. 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 activities are being conducted. The Class I air quality designation for the Park would not be affected by the proposal; therefore, air quality is dismissed from further analysis in this document.

Soundscapes

In accordance with NPS Soundscape Policy (NPS 2006) and Director's Order 47 *Sound Preservation and Noise Management*, an important component of the NPS's mission is the preservation of natural soundscapes associated with national park units. 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 NPS units as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

This project would not contribute to long-term impacts to the soundscape at the Park. The proposed project would have temporary impacts to the soundscape while construction activities are conducted, such as human-caused sounds from equipment, vehicular traffic, and people; however, any sounds generated during the construction would be temporary, lasting only as long as the activity is producing the sounds, and would have a negligible adverse impact on visitors, employees, and park neighbors. Therefore, the topic of soundscape management is dismissed from further analysis in this document.

Unique Ecosystems

There are no unique ecosystems, including biosphere reserves or world heritage sites, in the project area; therefore, this topic is dismissed from further analysis in this document.

Visitor Experience—Aesthetic Resources

In accordance with NPS Visitor Use Management Policy (NPS 2006), the enjoyment of park resources and values by people is part of the fundamental purpose of all park units. The NPS 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 NPS 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 NPS *2006 Management Policies* also state that scenic views and visual resources are considered highly valued associated characteristics that the NPS should strive to protect.

This project would not contribute to long-term impacts to the visitor experience or aesthetic resources at the Park. The project would be located at the eastern boundary of the TMD on land that is not included in congressionally designated wilderness (land that was added to the park after the 1976 wilderness designation). The proposed action would have only temporary impacts on park aesthetics while construction activities are being conducted. These temporary impacts would last only as long as the activity (approximately ten days for pipeline repairs) and would have a negligible adverse effect on the visitors' experience. Therefore, this topic is dismissed from further analysis in this document.

Cultural Landscapes

According to NPS Director's Order 28 *Cultural Resource Management Guideline*, cultural landscapes are complex resources that range from large rural tracts covering several thousand acres to formal gardens of less than 1 acre. Natural features such as landforms, soils, and vegetation are not only part of the cultural landscape, they provide the framework within which it evolves. In the broadest sense, a cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions. The project area is not part of a cultural landscape that is eligible for the National Register of Historic Properties and therefore this topic is dismissed from further analysis in this document.

Ethnographic Resources

In accordance with NPS Ethnographic Resource Management Policy (NPS 2006), ethnographical resources are the cultural and natural features of a park that are of traditional significance to traditionally associated peoples. Ethnographic resources are defined by the NPS as a “site, substance, 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” (Director’s Order 28). Executive Order 13007 directs federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. Specifically, federal agencies are directed to 1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and 2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites. According to DO-28 and Executive Order 13007 on sacred sites, the NPS should try to preserve and protect ethnographic resources.

American Indian tribes traditionally associated with the Park include the Ak Chin Indian Community Council, Fort McDowell Yavapai Nation, Gila River Indian Community Council, Hopi Tribe, Pascua Yaqui Tribe, Salt River Pima-Maricopa Indian Community, Tohono O’odham Nation, and Zuni Tribe. These tribes were contacted during initial scoping for this project on May 3, 2010 and a letter stating “No Historic Properties Affected” was received from the Hopi Tribe. The NPS will continue to consult with these American Indian tribes and copies of the EA will be forwarded to each affiliated tribe or group for review or comment. If subsequent issues or concerns are identified, appropriate consultations would be undertaken. This topic is dismissed from further analysis in this document.

Museum Collections

In accordance with NPS Museum Collection Policy (NPS 2006) and with Director’s Order 24 *Museum Collections*, the NPS 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, NPS museum collections. There would be no impacts to museum collections as a result of this proposal and this topic is dismissed from further analysis in this document.

Socioeconomics/Land Use

The proposed action would not change local and regional land use, appreciably impact local businesses or other agencies, or affect land occupancy, values, or ownership. Implementation of the proposed action could provide a negligible beneficial impact to the economy of nearby Tucson, Arizona. Any increase in workforce revenue would be temporary and negligible, lasting only as long as the construction activities occur. Because the impacts to the socioeconomic environment and land use would be negligible, this topic is dismissed from further analysis in this document.

Minority and Low Income Populations

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 project would increase the safety of the pipeline for all people 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. Therefore, environmental justice is dismissed from further analysis in this document.

Other Agency or Tribal Land Use Plans or Policies

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the 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 Alaska Native tribes. There are no Indian trust resources at Saguaro National Park. Therefore, the project would have no effects on Indian trust resources, and this topic is dismissed from further analysis in this document.

Long-term Management of Resources (Park Operations)

The proposed action is not expected to have an appreciable impact on park operations, park lands, or resource productivity. Long-term management requirements would be identical to current management requirements. This topic is dismissed from further analysis in this document.

Wilderness

In accordance with 2006 *Management Policies*, the superintendent of each park containing wilderness resources will develop and maintain a wilderness management plan or equivalent planning document to guide the preservation, management, and use of these resources. The wilderness management plan will identify desired future conditions, and thresholds beyond which management actions will be taken to reduce human impacts on wilderness resources.

The pipeline ROW was included in park expansion in 1994 and the proposed action does not occur in a wilderness area; therefore 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 proposed action does not involve the use of artificial light except that needed during welding or other activities in the pipeline trench. All work will be conducted during daylight hours. Because these effects are negligible, this topic is dismissed from further analysis in this document.

Climate Change

Climate change refers to the shifts in Earth's long-term (decades to millennia) weather patterns as a result of changes to the concentrations of greenhouse gases in Earth's atmosphere. A greenhouse gas is a gas that traps heat when emitted into Earth's atmosphere. Greenhouse gases emitted from the project area consist of truck and equipment exhaust. 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 Park, 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 in this document.

Energy Resources

NPS Energy Management Policy (NPS 2006; page 131) states, “The National Park Service would conduct its activities in ways that use energy wisely and economically. Park resources and values would not be degraded to provide energy for NPS purposes. The Service would adhere to all federal policies governing energy and water efficiency, renewable resources, use of alternative fuels, and federal fleet goals as established in the Energy Policy Act of 1992.”

The EPNG Line No. 1008 does not supply natural gas to Saguaro National Park and the repair of this pipeline would be conducted by EPNG personnel. The Park does not oversee operations management of EPNG’s facilities, vehicles, and equipment to minimize the consumption of energy, water and non-renewable fuels. The Park would not employ energy efficient methods in repairing this pipeline nor is any facility construction proposed. The impacts to energy resources along the pipeline would be less than negligible and there would be no unacceptable impacts. Therefore, this topic is dismissed from further analysis in this document.

Chapter 2

ALTERNATIVES CONSIDERED

A total of two Action Alternatives and the No Action Alternative were originally identified for this project. Of these, one of the Action Alternatives was dismissed from further consideration for various reasons, as described later in this chapter. Therefore, one Action Alternative and the No Action Alternative are carried forward for further evaluation in the EA.

Alternatives Carried Forward

Alternative 1 – No Action

Under this alternative, no improvements would be performed on EPNG Line No. 1008. The pipeline would remain exposed at several locations where it would be subject to corrosion, line strikes, and possible rupture. The continued deterioration of the pipeline would result in continued safety concerns for Park visitors and the general public.

Alternative 2 – Repair EPNG Line No. 1008

This alternative consists of the removal and replacement of the existing exposed pipe with new pipe at two locations on Park land (Sites 3 and 4) and two locations on private property (Sites 1 and 2) to restore cover over EPNG Line No. 1008. In addition, temporary workspace for access around mainline valve 16 on Park land (Site 5) is necessary. The two sites located on private property have no federal permitting requirements that would trigger NEPA analysis, therefore are not analyzed in this document except under the cumulative impacts section. The four removal and replacement sites will require cutting pipe, excavating a deeper trench, installing new pipe, and mitigating erosion. The project area includes 1) the existing EPNG 30-foot-wide ROW from Abington Road to Belmont Road; 2) four 30-foot-wide temporary construction easements that range in length from 80 to 500 feet and that are adjacent to and oriented lengthwise parallel to the northeastern edge of the existing ROW; and 3) one 15-foot-wide temporary access road around the east side of MLV 16, along the existing access road. The total area of potential effect for this project is 2.69 acres (2.17 acres on NPS land plus 0.52 acre on private land). This includes 2.0 acres of existing pipeline ROW (1.60 acres on NPS land plus 0.40 acre on private land) and 0.69 acre of proposed temporary construction workspace (0.57 acre on NPS land plus 0.12 acre on private land) (Figures 1, 2, and 3).

Construction work is scheduled to begin in mid-October and would take approximately ten days to complete work at all four repair sites. Topsoil segregation (i.e., removing and stockpiling the top 4 to 6 inches of soil separate from subsoil) will be completed in the trenchline (i.e., the area of trenching). Topsoil will be stored on the north side of the ROW and subsoil will be stored on the south side of the ROW, away from the temporary workspace areas. Restoration and revegetation would commence immediately following construction. Fill dirt would be added where necessary to adequately cover the pipe, and the dirt would be compacted and graded. Water bars would be added to improve drainage and prevent future washouts, and the disturbed areas would be restored and revegetated to industry standards in accordance with the Federal Energy Regulatory Commission's (FERC's) *Upland Erosion Control, Revegetation, and Management Plan* (Plan) provided in Appendix A and accordance with Park standards. All work would be done in accordance with federal standards.

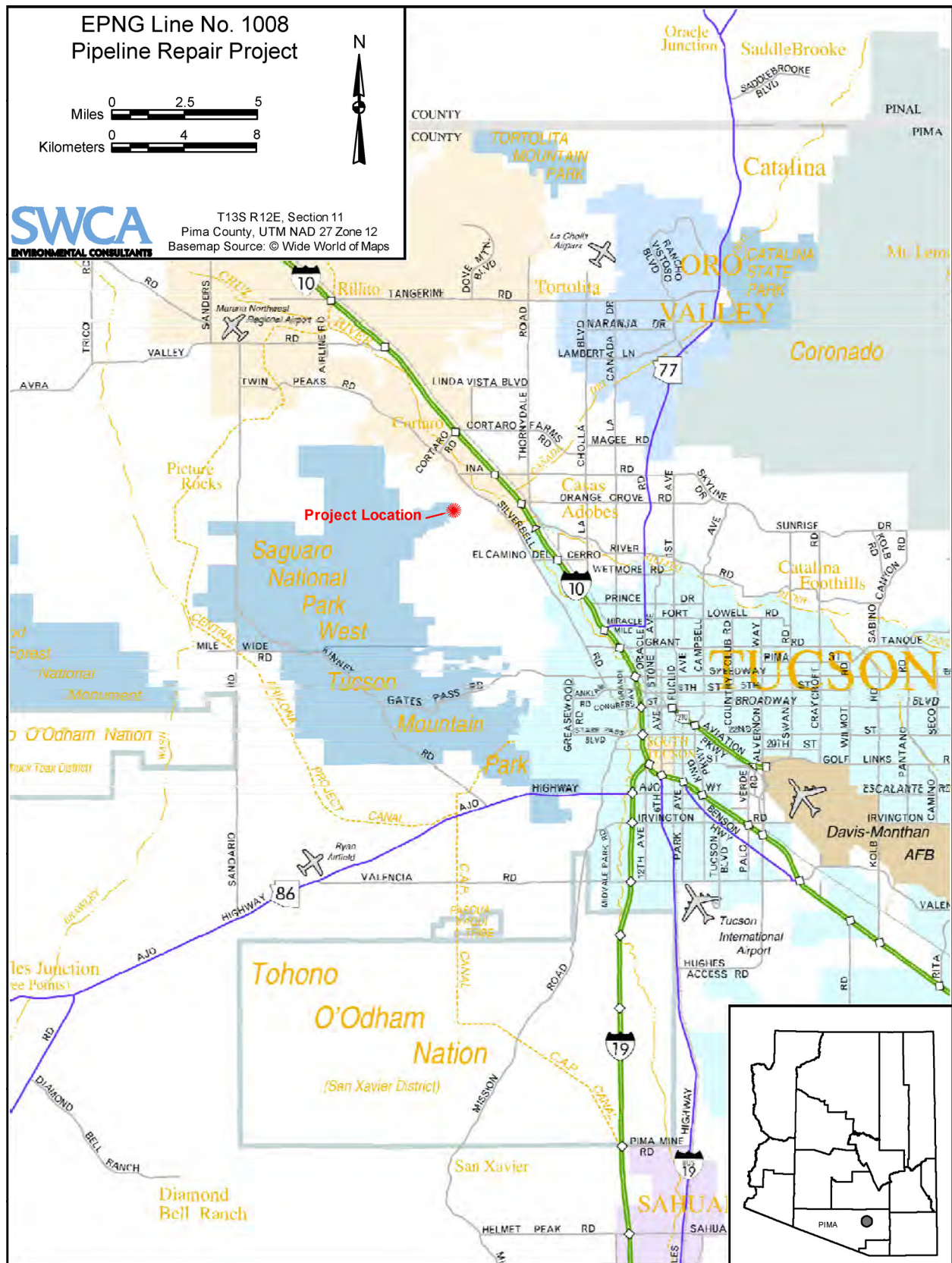


Figure 1. Regional location.

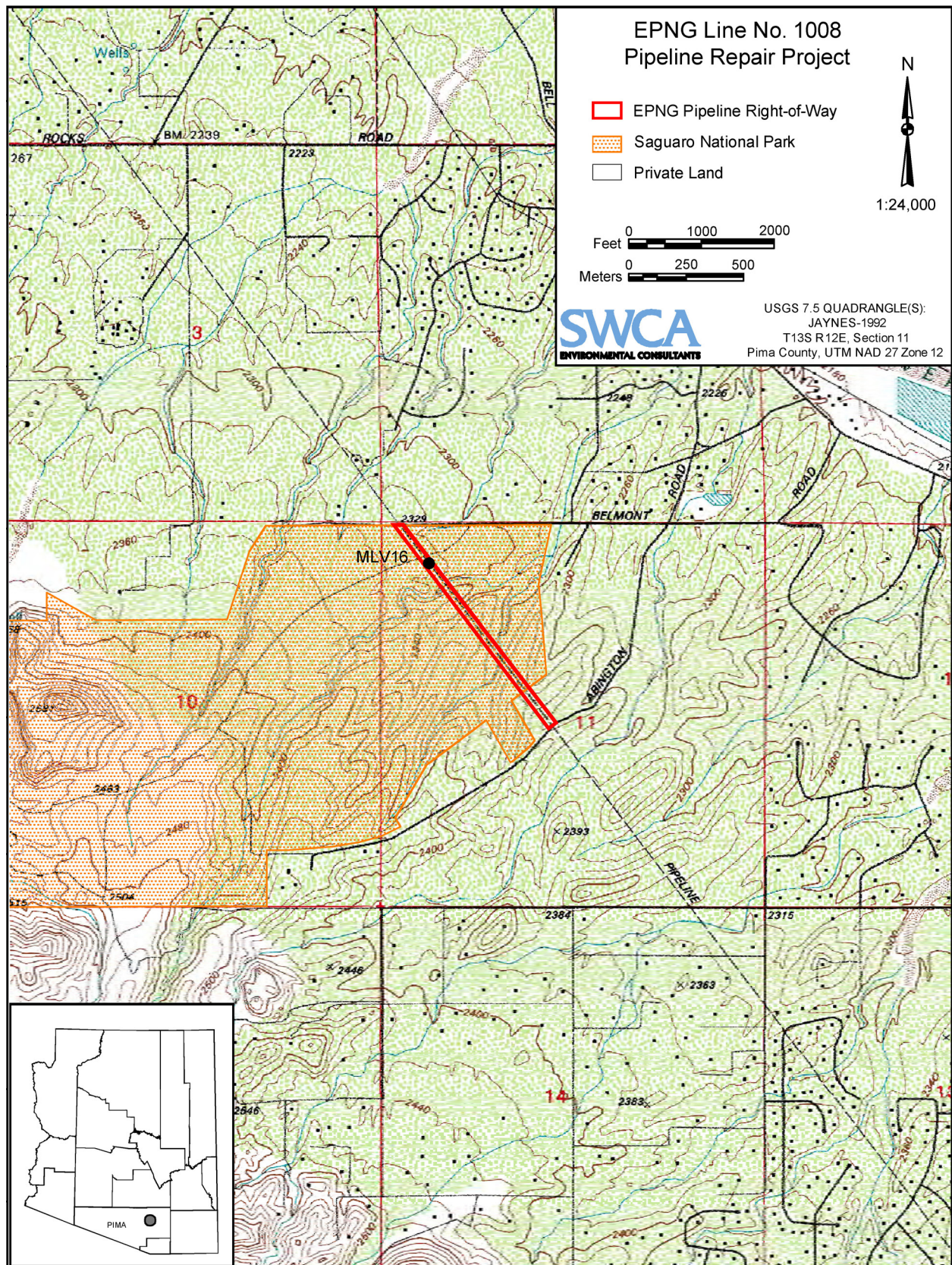


Figure 2. Project location.

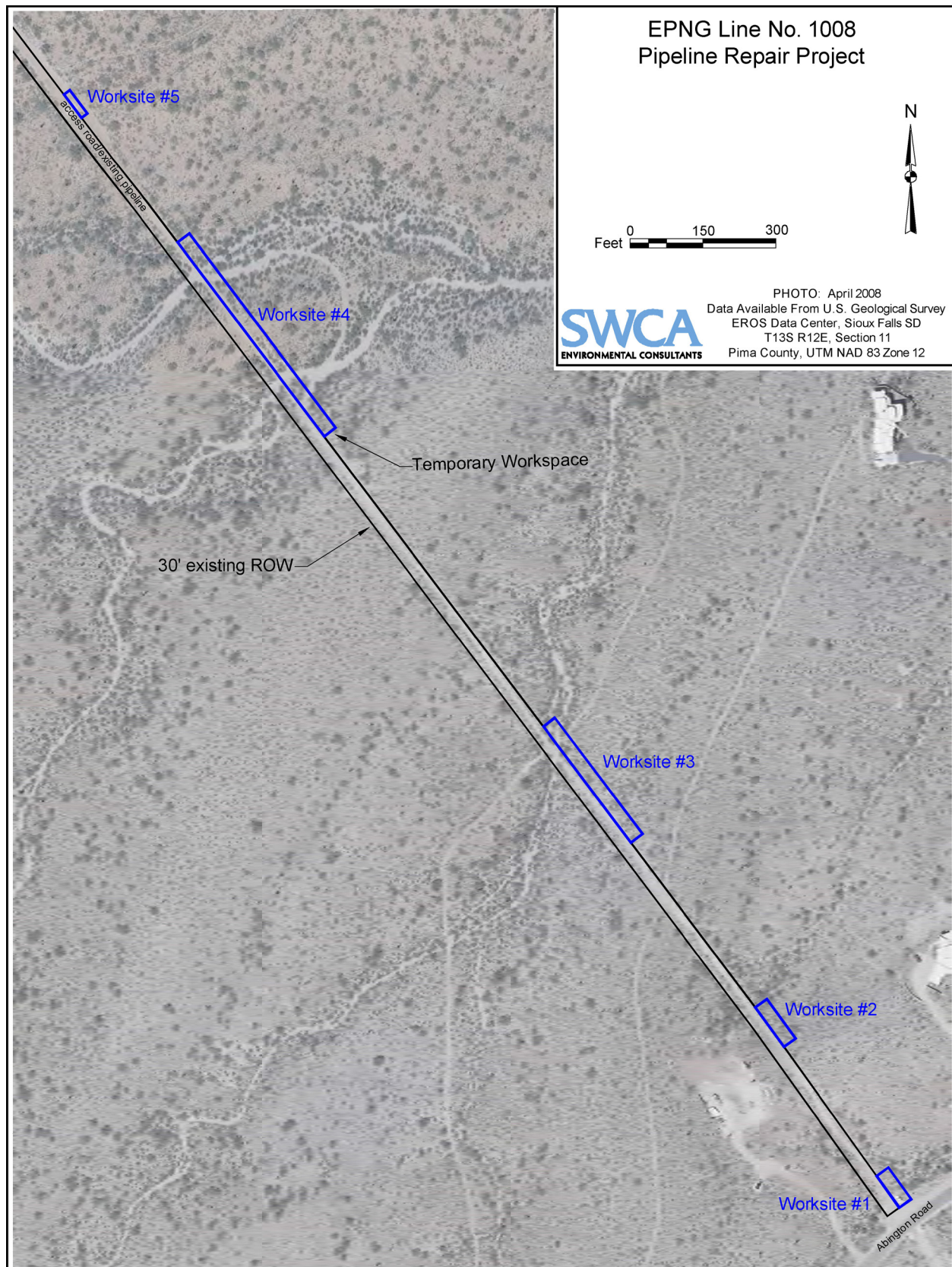


Figure 3. Project area showing temporary workspaces and the EPNG ROW.

Proposed improvements on Park lands under Alternative 2 include:

- **Site 3** – Requires excavation and removal of the existing pipe, replacement with new pipe, and pipe coating, lowering, and backfill. Approximately 240 feet of pipe would be replaced. Grading and water bars would be used to provide additional cover and prevent future washouts. Approximately 9,000 square feet (30 × 300 feet) of existing ROW and 9,000 square feet (30 × 300 feet) of temporary workspace would be required to complete the work at this site.
- **Site 4** – Requires excavation of the existing pipe, replacement with new pipe, and pipe coating, lowering, and backfill. Approximately 280 feet of pipe would be replaced. Grading of slopes and water bars may be used to improve drainage and prevent future washouts. Approximately 15,000 square feet (30 × 500 feet) of existing ROW and 15,000 (30 × 500 feet) of temporary workspace would be required to complete the work at this site.
- **Site 5** – Only requires temporary workspace to the northeast side of MLV 16 to provide access for equipment and vehicles. Approximately 900 square feet (15 × 60 feet) of temporary workspace would be required at this site.

Mitigation Measures for Alternative 2

In addition to the standard mitigation measures for the Park presented in Appendix B, the following mitigation measures have been developed to minimize the degree and/or severity of adverse effects, and would be adhered to during implementation of the preferred alternative:

- Construction activities would be scheduled to minimize construction-related impacts on visitors. There would be no construction on weekends. Areas not under construction would remain accessible to visitors as much as is safely possible. Signage will be installed and maintained along the ROW prior to and during construction to inform park visitors of the project.
- Construction activities would minimize ground disturbance to reduce the possibility of exotic plant infestations. The area would be periodically inspected by EPNG inspectors for the presence of invasive species from the Park's list of invasive species, and treatments would be applied according to the park's *Exotic Plant Management Plan* (NPS 2004) for two years following construction.
- Implementation of a program for inspection and treatment (e.g., power washing) of vehicles and equipment prior to entering the project area to minimize the introduction of non-native seeds to the project area. In addition, all materials brought into the Park (fill, gravel, etc.) will be inspected for the presence of non-native seeds prior to coming on site and only weed-free material will be brought into the Park.
- To minimize the amount of ground disturbance, staging and stockpiling areas would be located in previously disturbed sites to the extent possible, away from visitor use areas. All staging and stockpiling areas would be returned to pre-construction conditions following construction. Existing vegetation at the site would be disturbed as little as possible during construction. Topsoil from the any trenching will be segregated from subsoil to maintain seed "bank" and when work is complete the disturbed areas will be "ripped" to alleviate compaction before redistributing the segregated topsoil.
- All areas disturbed by construction would be rehabilitated as soon as possible using native species and natural materials. No saguaro cacti would be removed as part of this project. Ocotillos and cactus such as barrel, hedgehog, and *Mammillaria* species will be avoided by

construction activities when possible. When not possible to avoid these species, they would be salvaged and replanted as part of the rehabilitation of other disturbed sites.

- To assist with erosion control and water quality protection, EPNG would incorporate all applicable construction techniques and mitigation measures during and following the construction process. These techniques and measures are described in the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* and *Wetland and Waterbody Construction and Mitigation Procedures* (see Appendix A). Disturbed areas would be revegetated and recontoured following construction.
- If construction activities disrupt any nesting or burrowing wildlife species, construction will be temporarily halted and staff from the Natural Resource Division will be contacted. This mitigation measure is especially important for dormant Sonoran desert tortoises (*Gopherus agassizii*) and Gila monsters (*Heloderma suspectum*). Any trenches or pits left open at night will have ramps so that animals that might fall in can escape.
- Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the Park would consult with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, *Post Review Discoveries*. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The NPS would ensure that all workers are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites and historic properties. Workers would also be instructed on procedures to follow in case a previously unknown archeological resource is uncovered during construction. Construction workers and supervisors would be informed about the special sensitivity of the Park's values and regulations.
- Production of dust during construction will be controlled by applying water and other dust control measures as required by Pima County air pollution regulations.

Alternatives Considered and Dismissed

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

Reroute Pipelines Outside Saguaro National Park

EPNG considered purchasing new, currently undisturbed ROW and installing a new pipeline around the west side of the Park TMD for a distance of approximately 30 miles. Approximately 10 miles of Line Nos. 1007 and 1008 (including the exposed sections in the Park) would be abandoned in place. Although this alternative would meet the stated purpose and need to mitigate existing safety risks, it would result in significant cost to the public, involve extensive disturbance and environmental impacts to previously undisturbed lands (resulting from the installation of approximately 60 miles of pipe [two pipelines, each approximately 30 miles long]), and impacts to natural gas customers in the pipelines' service regions.

Alternative Summaries

Table 1 summarizes the major components of Alternatives 1 and 2, 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 2 meets each of the objectives identified for this project, while the No Action Alternative does not address the objectives.

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

Alternative Elements	Alternative 1 – No Action	Alternative 2 – Repair Exposed Pipeline
Repair exposed natural gas pipeline	No improvements would be performed on the EPNG Line No. 1008. The pipeline would remain exposed at several locations where it would be subject to corrosion, line strikes, and possible rupture.	The EPNG Line No. 1008 would be repaired and remediated to USDOT standards.
Rehabilitate soil erosion	Soil erosion would continue in the pipeline ROW; no rehabilitation would occur.	The pipeline ROW would be rehabilitated to replace soil and vegetation, and to add erosion control features.
Project Objectives	Meets Project Objectives?	Meets Project Objectives?
Public safety	No. The continued deterioration of the pipeline would result in continued safety concerns for Park visitors and the general public.	Yes. The EPNG Line No. 1008 would be repaired and remediated to USDOT safety standards.
Reduce erosion	No. Soil erosion would continue in the pipeline ROW at the current locations and rate.	Yes. The project includes control features to reduce erosion from stormwater run-off.
Protect Park resources	No. Soil and vegetation resources would likely continue to degrade and be impacted from stormwater run-off erosion. Visitor use of the ROW as a trail would likely be adversely impacted through an increased awareness of the pipeline exposures and ROW deterioration.	Yes. Soils and vegetation would be restored in the project area ROW and the potential for future impacts to Park resources would be minimized. Visitor use of the ROW as a trail would likely be enhanced.

Identification of the Environmentally Preferred Alternative

In accordance with NPS Director's Order 12, the environmentally preferred alternative is determined by applying the criteria suggested in the NEPA, which guides the CEQ. The CEQ provides direction, under Section 1505.2(b) in cases where an EIS has been prepared, that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- assure for all generations' safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- achieve a balance between population and resource use that 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."

Alternative 1, No Action, only minimally meets three of the six evaluation factors and does not meet the other factors because it does not provide for safe visitor experiences. It would contribute to the continued deterioration of soil resources in the project area and lead to an increase in pipeline exposures, leading to an increase in corrosion and likelihood of pipeline strikes which could lead to pipeline failure.

Alternative 2, including all mitigation measures included in this document, is the environmentally preferred alternative because it best addresses these six evaluation factors. Alternative 2 better meets these objectives than Alternative 1 primarily because this alternative would repair and rehabilitate the pipeline and ROW to prevent future erosion and exposure of the pipelines in the project area. Trail access along the pipeline ROW would be improved resulting in a more pleasant and safe visitor experience and improved resource conditions.

No new information came forward from public scoping or consultation with other agencies to necessitate the development of any new alternatives, other than those described and evaluated in this document. Because it meets the purpose and need for the project, the project objectives, and is the environmentally preferred alternative, Alternative 2 is therefore recommended as the NPS Preferred Alternative. For the remainder of the document, Alternative 2 will be referred to as the Preferred Alternative.

Chapter 3

AFFECTED ENVIRONMENT

This section provides descriptions of the Park's resources that comprise the affected environment for the impact topics carried forward for detailed analyses in the EA. Resources discussed in this section include geological resources, water resources, vegetation, special status and threatened and endangered species, non-native species, recreation, and archaeological and ethnographical resources. Rationale for why these resources were carried forward for analysis is provided in Chapter 1. Proposed project impacts are discussed in the *Environmental Consequences* section of this EA.

Geological Resources—Soils

According to the NPS (2007:135), "The Tucson Mountain District is typical of the Basin-and-Range physiographic province and consists of a normal-faulted, east-tilted wedge of Paleozoic and Mesozoic sedimentary rock. The Tucson Mountains themselves are composed of intrusive plugs, flow and welded tuffs, and sedimentary rocks; the lower slopes of the mountains are covered by terrace deposits or other alluvium, sometimes up to 400 feet thick. The soils of the Tucson Mountain District slopes are shallow, coarsely textured, and well-drained, and soils of the bajadas are alluvial. Soils become progressively finer with more sand and clay from bedrock to bajada to flats."

Soils of the pipelines ROW where project construction would be conducted are on the Pinaleno-Stagecoach complex (5%–16% slopes), Pinaleno-Stagecoach-Palos Verdes complex (10%–35% slopes), and the Tubac gravelly loam (1%–8% slopes) (NRCS 2010). These soils range from gravelly sandy clay loam to extremely gravelly sandy clay loam formed in mixed alluvium. Hazards of erosion from water runoff and wind range from moderate to slight.

Water Resources—Waters of the U.S./Stream Flow Characteristics

The proposed project area does not contain surface waters, and is dry except for periodic runoff during storm events. Water quality, water quantity, and drinking water are not expected to be affected by the project.

A preliminary jurisdictional delineation of waters of the U.S. was completed in 2010 (SWCA 2010). Pursuant to Regulatory Guidance Letter 08-02 (USACE 2008) an applicant can request a "preliminary delineation" in lieu of an approved Rapanos delineation. A field reconnaissance was conducted to 1) determine whether there are any natural or human-made drainages crossing the proposed project area that meet the definition of waters of the U.S. (according to regulation at 33 CFR Part 328.3) and are subject to federal regulation under Section 404 of the CWA (33 USC §1344); and 2) if waters of the U.S. are present, to delineate the limits of federal jurisdiction as outlined in 33 CFR Part 328.4–5.

Four ephemeral drainage features in the project area were identified as potential waters of the U.S. Within the ROW, these four drainages total 0.08 acre. There are no wetlands in the project area.

Vegetation

The project area is in a region described as the Arizona Upland subdivision of the Sonoran Desertscrub biotic community, where the geography, elevation and climate (specifically the bimodal rainfall pattern) promote a greater structural diversity of life forms and vegetation communities than those found in surrounding southwestern deserts; e.g, the Mojave, Chihuahuan, or Great Basin deserts. In comparison to these other deserts, which are mainly dominated by low shrubs, Sonoran Desertscrub displays more diverse arboreal elements, including a great variety of succulents, including large cacti (Turner and Brown 1994).

Two vegetation associations are found in the project area: paloverde-mixed shrub-mixed cacti and xeroriparian mixed shrub. The paloverde-mixed shrub-mixed cacti association is an upland association dominated by foothill paloverde (*Parkinsonia microphylla*), triangle-leaf bursage (*Ambrosia deltoidea*), creosote bush (*Larrea tridentata*), and a variety of small cacti, including prickly pear cactus (*Opuntia* sp.), chainfruit cholla (*Cylindropuntia fulgida*), and walkingstick cactus (*C. spinosior*). Also present in the project area in small numbers are globe cactus (*Mammillaria* sp.), barrel cactus (*Ferocactus wislizeni*), Christmas cactus (*C. leptocaulis*), whitethorn acacia (*Acacia constricta*), burroweed (*Isocoma tenuisecta*), desert zinnia (*Zinnia acerosa*), white ratany (*Krameria grayi*), ocotillo (*Fouquieria splendens*), and Mexican crucillo (*Condalia warnockii*). Saguaro cactus (*Carnegiea gigantea*) occurs in the project vicinity, but not in the project disturbance footprint.

The xeroriparian mixed shrub association occurs in association with ephemeral washes in the project area. This vegetation type is associated with an ephemeral water supply and typically contains plant species also found in adjacent uplands, although xeroriparian plants are typically larger and often occur at higher densities than those in uplands. Dominant xeroriparian mixed scrub vegetation in the project area includes foothill paloverde, velvet mesquite (*Prosopis velutina*), spiny hackberry (*Celtis ehrenbergiana*), whitethorn acacia, catclaw acacia (*Acacia greggii*), and burrobrush (*Hymenoclea* sp.).

Species of Special Concern/Unique or Important Wildlife or Wildlife Habitat

A biological evaluation was completed in 2009 (SWCA 2009a). Four species have the potential to occur in the project area or vicinity. These include one federally listed endangered species, the lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), two species that have been petitioned for federal listing, cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) and Sonoran desert tortoise (*Gopherus agassizii*), and one species listed by the Park (NPS 2007) as a wildlife species of special concern, Gila monster (*Heloderma suspectum*). Cactus ferruginous pygmy-owl was formerly federally listed endangered, but was removed from the federal list of endangered and threatened wildlife in 2006 following a court decision.

There are no potential lesser long-nosed bat forage plants (i.e., saguaros) in the existing EPNG ROW or temporary workspace areas and no maternity or post-maternity roosts in the project vicinity. However, there are numerous large, multi-armed saguaro cacti in the project vicinity, beginning approximately 30 feet from the proposed disturbance footprint. Cactus ferruginous pygmy-owl is very rare and possibly extirpated from the Tucson Basin. However, because the project area was in formerly designated Critical Habitat for cactus ferruginous pygmy-owl, surveys were conducted in 2010 according to approved protocol and none were detected. Sonoran desert tortoise and Gila monster are known to occur in the project vicinity.

Non-native Species

Of the non-native invasive plant species found in the Tucson area, two perennial bunch grasses are of specific concern within Saguaro National Park: buffelgrass (*Pennisetum ciliare*) and fountain grass (*Pennisetum setaceum*). Neither of these species was observed in the project area during completion of a biological evaluation in 2009 (SWCA 2009a). These plants impact ecosystem structure by crowding out native plants, and alter ecosystem function such as nutrient cycling, hydrology, and most importantly, fire regime. They are believed to fuel larger and more frequent wildfires; the Arizona Upland is not a fire-adapted vegetation community, with high post-fire mortality to some of the community's most important species, the saguaro, foothill paloverde, and desert ironwood (*Olneya tesota*).

Recreation Resources—Trail Routes and Visitor Use and/or Experience

In response to the direction provided in the 2008 GMP/EIS, Saguaro National Park developed a comprehensive trails plan that addresses trail locations, designs, and types and an EA for the comprehensive Trails Plan was completed. The plan's Preferred Alternative includes the opportunity for developing a bicycle trail along the EPNG gas pipeline ROW being evaluated in this EA. A trailhead is planned on Park land at the northern end of the pipeline ROW, and trail access is planned at the southern end of the pipeline ROW. Currently there is use of the pipeline ROW as an undesignated social trail by local residents.

Archaeological Resources

An archeological survey of the project area was conducted in 2009 to assist in the identification of historic properties—properties listed in or eligible for listing in the National Register of Historic Places—that may be affected by the repair of EPNG Line No. 1008 (SWCA 2009b). The survey resulted in the identification of one previously recorded archaeological site, two previously recorded historic in-use natural gas pipelines (EPNG Line Nos. 1007 and 1008), and three non-site isolated occurrences.

The archaeological site, AZ AA:12:821(ASM), is eligible for listing in the NRHP. It is a large, low-density artifact scatter of prehistoric and historic-era materials and widely spaced rock features of probable prehistoric and historic-era origins. The site is located in a portion of the project area where no ground disturbance is proposed and no NRHP-contributing components of the site (artifacts or features) are present within the project area.

EPNG Line Nos. 1007 and 1008, which have been assigned Arizona State Museum (ASM) site numbers AZ AA:12:875(ASM) and AZ AA:12:928(ASM), were constructed in 1933 and 1941, respectively, in response to the growing natural gas needs of the Tucson and Phoenix markets. Since 2002, historic in-use natural gas pipelines, except when abandoned or located on tribal lands, have been exempt from the National Historic Preservation Act Section 106 review in accordance with a notice provided by the Advisory Council on Historic Preservation (*Federal Register* 67[66]:16364–16365).

The non-site isolated occurrences of features and artifacts are not eligible for listing in the NRHP. On June 8, 2010, the Park initiated Section 106 review with the Arizona State Historic Preservation Officer (SHPO) by sending a copy of the archaeological survey report and a letter requesting concurrence of a No Adverse Effect to Historic Properties finding.

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Chapter 4

ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of implementing the No Action Alternative (Alternative 1) or the proposed Action Alternative (Alternative 2). All remaining alternatives were dismissed (see Chapter 2 *Alternatives* in this EA). Topics analyzed in this chapter include impacts to geologic (soils) resources, water resources (i.e., water of the U.S. and stream flow characteristics), vegetation, sensitive and threatened and endangered species, non-native species, recreation (trails and visitor use and experience), archaeological resources, and ethnographic resources. Also contained in Chapter 3 are descriptions of the affected environment for the resource topics included in this chapter. 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, whereas more specific impact thresholds are given for each resource at the beginning of each resource section.

- **Type** describes the classification of the impact as either beneficial or adverse, direct or indirect:
 - *Beneficial*: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
 - *Adverse*: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
 - *Direct*: An effect that is caused by an action and occurs in the same time and place.
 - *Indirect*: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.
- **Context** describes the area or location in which the impact would occur. Are the effects site-specific, local, regional, or even broader?
- **Duration** describes the length of time an effect would occur, either short-term or long-term:
 - *Short-term* impacts generally last only during construction, and the resources resume their pre-construction conditions following construction.
 - *Long-term* impacts last beyond the construction period, and the resources may not resume their pre-construction conditions for a longer period of time following construction.
- **Intensity** describes the degree, level, or strength of an impact. For this analysis, intensity has been categorized into negligible, minor, moderate, and major. Because definitions of intensity vary by resource topic, intensity definitions are provided separately for each impact topic analyzed in the EA.

Cumulative Effects: The CEQ regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the No Action Alternative and the Preferred Alternative.

Cumulative impacts were determined by combining the impacts of the Preferred Alternative with other past, present, and reasonably foreseeable future actions. To this end, it was necessary to identify other ongoing or reasonably foreseeable future projects at the Park and the surrounding region. The geographic scope for this analysis includes elements only within the TMD boundaries, or immediately adjacent, whereas the temporal scope includes projects within a range of approximately ten years. Given this, the following actions were identified for the purpose of conducting the cumulative effects analysis:

- **Past Actions** – The Saguaro National Park *Exotic Plant Management Plan Environmental Assessment* was completed and implementation began in 2004 (NPS 2004). Control of buffelgrass, fountain grass, and other non-native plants in the vicinity of the project area and adjacent trails was implemented.
- **Current Actions** – Saguaro National Park’s Comprehensive Trails Management Plan was approved by the NPS Intermountain Region Director on July 31, 2009. The objectives of the plan are to prevent impairment and unacceptable impacts on natural and cultural resources; provide reasonable access to the trail network and trailheads; eliminate unnecessary and/or parallel/duplicate trails; ensure a safe and maintainable trail network; provide for a clearly designated trail system; and offer a variety of trail experiences.

The Saguaro National Park *Exotic Plant Management Plan Environmental Assessment*.

Continued control of buffelgrass, fountain grass, and other non-native plants in the vicinity of the project area and adjacent trails is on-going. Park staff treats non-native plants in this area as needed.

The Park GMP was finalized in 2008.

The proposed action includes two pipeline exposure sites located adjacent to the TMD, on private property, which will be remediated by EPNG at the same time as the proposed action on Park lands.

- **Future Actions** – Saguaro National Park is currently implementing its Comprehensive Trails Management Plan. The plan’s preferred alternative includes the opportunity for developing a bicycle trail along the EPNG gas pipeline ROW being evaluated in this EA. A new trail access point is proposed at the southern end of the pipeline ROW at Abington Road and a new trailhead is proposed at the northern end of the pipeline ROW along Belmont Road.

The Saguaro National Park *Exotic Plant Management Plan Environmental Assessment*.

Continued control of buffelgrass, fountain grass, and other non-native plants in the vicinity of the project area and adjacent trails is planned. Park staff will continue treat non-native plants in this area as needed.

Geological Resources—Soils

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to soils were derived from the available soils information and Park staff’s past observations of the effects on soils from both visitor use and construction activities, and professional judgment. The thresholds of change for the intensity of impacts to soils are defined as follows:

- Negligible:** Impacts are at the lowest levels of detection and cause very little or no physical disturbance /removal, compaction, unnatural erosion, when compared with current conditions. Alteration to geology and/or soils would be so slight that it would not

affect the soils ability to sustain biota, water quality, and hydrology. Geology and soils would be consistent with historical or baseline conditions.

- Minor:** Impacts are slight but detectable in some areas, with few perceptible effects of physical disturbance/removal, compaction, or unnatural erosion of soils. Alteration to geology and/or soils would affect its ability to sustain biota, water quality, and hydrology. Slight alterations in geology and soils would be consistent with historical or baseline conditions. Mitigation measures, if needed to offset adverse impacts, would be simple and successful.
- Moderate:** Impacts are readily apparent in some areas and have measurable effects of physical disturbance/removal, compaction, or unnatural erosion of soils. Alteration to geology and/or soils would affect its ability to sustain biota, water quality, and hydrology. Alterations to geology and soils may occur. Mitigation measures, if needed to offset adverse impacts, could be extensive but would likely be successful.
- Major:** Impacts are readily apparent in several areas and have severe effects of physical disturbance/removal, compaction, or unnatural erosion of soils. Alteration to geology and/or soils would have a lasting impact on its ability to sustain biota, water quality, and hydrology. Extensive mitigation measures would be needed to offset any adverse impacts and their success could not be guaranteed.
- Impairment:** Major, adverse impact(s) to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents.

Impacts of Alternative 1 – No Action

Impact Analysis: The primary impact to soils from the No Action Alternative is continued erosion and further exposure of the pipelines that would result in the loss of surface organic matter, and an increase in soil erosion along the gas pipelines ROW by visitor use and stormwater runoff. Surface soils would continue to be susceptible to erosion from wind and water, and from development and visitor use of the pipeline ROW as a designated trail. Impacts due to soil erosion in the pipeline ROW would be moderate, and could impact public safety in the immediate area of the pipeline by creating hazardous conditions that would leave the pipeline susceptible to corrosion and failure.

Cumulative Impacts: The TMD currently has approximately 43 miles of trails open to hiking and equestrian use, with an additional 15 miles planned in the preferred alternative of the Comprehensive Trails Management Plan (NPS 2009). Past and present visitor use and stormwater runoff has contributed to gradual erosion and loss of soils along the pipeline ROW. Foreseeable visitor use of and water erosion to the pipeline ROW would result in continued soil loss. The NPS would continue to perform trail repair and mitigation, and construction according to prioritized need. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative would contribute a moderate amount of soil loss due to erosion in the project area to the cumulative scenario.

Conclusion: The soil resource in the project area has eroded, exposing the pipeline in two areas within the TMD of the Park and two areas adjacent to the Park. Impacts on soils in the project area under the No Action Alternative would be adverse, long-term and of moderate intensity. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative would contribute a moderate amount of soil loss to the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: The primary direct impacts to soils from the Preferred Alternative would be from excavation activities and from the potential for compaction from equipment, vehicles and material storage areas. The total area impacted would be less than 2.2 acres on Park lands. Excavation activities would be conducted in the previously excavated trench where Line No. 1008 is currently located. Compaction of soils from vehicles, equipment, and materials would occur in the ROW, and immediately adjacent to the ROW in temporary workspaces that total 0.57 acre. Direct impacts on soils in the project area would be adverse, short-term and of moderate intensity. Restoration activities would be implemented immediately following construction which would mitigate soils impacts in the project area ROW. Therefore, it is anticipated that impacts to geological resources, once mitigated, would be negligible.

Cumulative Impacts: The TMD currently has approximately 46 miles of trails open to hiking and equestrian use, with an additional 15 miles planned in the preferred alternative of the Comprehensive Trails Management Plan (NPS 2009). Past and present visitor use and stormwater runoff has contributed to gradual erosion and loss of soils from these trails, including along the pipeline ROW. Foreseeable visitor use of and water erosion to the pipeline ROW would result in continued soil loss, which would be minimized by the implementation of the mitigation measure detailed in this document. The NPS would continue to perform trail construction, repair, and mitigation according to prioritized need. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative, once mitigated, would contribute a negligible amount of soil loss due to erosion to the cumulative scenario.

Conclusion: Under the Preferred Alternative, direct impacts would occur to less than 2.2 acres of Park lands. The impacts are anticipated to be adverse, short-term, and of moderate intensity. Following construction, mitigation measures would minimize future soil erosion from stormwater run-off and soils in the project area would be stabilized and rehabilitated. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative, once mitigated, would contribute a negligible amount of soil loss to the cumulative scenario.

Water Resources

Methodology and Intensity Level Thresholds

The methodology used for assessing impacts to water resources (mainly water quality or quantity and stream flow characteristics) was based on a review of existing literature and studies, information provided by Park staff, and professional judgment. The thresholds for this impact assessment are as follows:

Negligible: Impacts would result in a change to water resources but the change would be so slight that it would not be of any measurable or perceptible consequence. Water quality and flow characteristics would be consistent with historical or baseline conditions. These changes would not affect the ephemeral drainages in the project area.

Minor: Impacts would result in a detectable change to water resources of the ephemeral drainages, but impacts would be expected to be small, of little consequence, and localized. Water quality and flow characteristics would be consistent with historical or baseline conditions. Mitigation measures, if needed to offset adverse effects, would be simple and successful.

- Moderate:** Impacts would result in a change to water resources that would be readily detectable and localized. Occasional alterations of historical or baseline water quality or flow characteristics may occur. Mitigation measures, if needed to offset adverse effects, could be extensive, but would likely be successful.
- Major:** Impacts would result in a change to water resources that would have substantial consequences on a regional scale. Frequent alterations in the historical or baseline water quality and stream flow conditions would occur over a large area and could result in modifications to the natural channel and in-stream flow characteristics. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed.
- Impairment:** Major, adverse impact to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents.

Impacts of Alternative 1 – No Action

Impact Analysis: There would be no impacts to water resources and water quality from the No Action Alternative as excavation in the ephemeral drainages would not occur.

Cumulative Impacts: Impacts to water resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies and Clean Water Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to water resources, the No Action Alternative would contribute a less than negligible amount of impact to the cumulative scenario.

Conclusion: Under the No Action Alternative, there would be no impacts on water resources in this area. Impacts to Park resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to water resources, this alternative would contribute a less than negligible amount of water resources diminution to the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: The impacts to water resources and water quality due to the Preferred Alternative would be limited to impacts to four ephemeral drainages that the project area ROW crosses. Direct impacts would occur during excavation of the pipeline trench where it crosses the four small drainages, and would include a potential for indirect impacts to surface water quality. Surface water quality impacts could occur from increases in sedimentation or turbidity from stormwater runoff during construction activities as a result of stormwater coming into contact with disturbed soils and washing sediments downstream. Impacts on water resources in the project area would be adverse, short-term and of moderate intensity. These potential impacts would be minimized and avoided by the use of best management practices identified in a project-specific Stormwater Pollution Prevention Plan and implemented during construction, as required by the Arizona Department of Environmental Quality-administered Arizona Pollution Discharge and Elimination System program for coverage under the 2008 Construction General Permit (AZG2008-01). In addition, a Clean Water Act Section 404 permit will be required for the project and will include numerous permit conditions that regulate construction activities in the ephemeral drainages, including returning the drainages as close as possible to preconstruction contours and

ensuring water quality protection certification. Finally, FERC's Plan and Procedures will be followed to ensure restoration and revegetation activities are completed. Therefore, it is anticipated that impacts to water resources, once mitigated, would be negligible.

Cumulative Impacts: Impacts from the proposed project, construction or maintenance of trails, and from the control of noxious or invasive species would all be subject to Clean Water Act regulations and permits, which would be implemented as needed, and would ensure negligible cumulative impacts to water resources. When combined with other past, present, and foreseeable future actions that would result in impacts to water resources, the Preferred Alternative would contribute a negligible amount of direct and indirect impacts to the cumulative scenario.

Conclusion: The impacts to water resources and water quality due to the Preferred Alternative would be limited to impacts to four ephemeral drainages that the project area ROW crosses. The impacted ephemeral drainages would be returned to preconstruction conditions following construction activities as required under Clean Water Act regulations. Mitigation measures implemented during construction would minimize impacts to the drainages. When combined with other past, present, and foreseeable future actions that would result in impacts to water resources, the Preferred Alternative would contribute a negligible amount of direct and indirect impacts to the cumulative scenario.

Vegetation

Methodology and Intensity Thresholds

The methodology used for assessing impacts to vegetation communities included survey identification of the communities in the project area, the review of existing literature and studies, information provided by Park staff, and professional judgment to determine the potential effects from pipeline replacement activities on the structure, composition, or distribution of plant communities. In addition, this analysis considers the changes in vegetation communities that could occur after restoration is completed.

The thresholds of change for the intensity of a vegetation impact are defined as follows:

- Negligible:** Actions that would not cause discernible alteration to vegetation structure, composition, abundance, and diversity.
- Minor:** Actions that would cause limited alteration to vegetation structure, composition, abundance, and diversity. Mitigation measures, if needed to offset adverse effects, would be simple and successful. Revegetation is readily achievable through natural succession and seeding processes.
- Moderate:** Actions that would cause alteration to vegetation structure, composition, abundance, and diversity. Mitigation measures, if needed to offset adverse effects, could be extensive, but would likely be successful. Revegetation is achievable but likely requires additional resources to accomplish goals.
- Major:** Actions that would cause substantial alteration to vegetation composition, abundance, and diversity. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed. Revegetation may not be attainable even with substantial efforts.
- Impairment:** Major, adverse impact to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents.

Impacts of Alternative 1 – No Action

Impact Analysis: The No Action Alternative would not result in impacts to vegetation because construction would not take place.

Cumulative Impacts: Past and present visitor use has contributed to gradual loss of vegetation from unauthorized use of the pipeline ROW as a hiking trail, and past construction and maintenance of the pipeline and ROW has resulted in the loss of vegetation in the ROW. Impacts from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies, which would be implemented as needed to ensure negligible cumulative impacts to vegetation. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, the No Action Alternative would contribute a negligible amount of vegetation loss to the cumulative scenario.

Conclusion: The No Action Alternative would not result in impacts to vegetation in the temporary workspace areas because construction would not take place. Impacts from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies, which would be implemented as needed to ensure negligible cumulative impacts to vegetation. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, this alternative would not contribute to vegetation loss in the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: Impacts to vegetation from the Preferred Alternative would occur in the temporary workspaces required at three locations on Park lands. The three temporary workspace areas total approximately 0.57 acre. Direct impacts would occur from clearing of vegetation and the crushing of forbs and grasses from the operation of equipment and vehicles, and the creation of soil piles during excavation activities. Impacts on vegetation in the project area would be adverse, short-term and of minor intensity. Impacts would be minimized through the implementation of the FERC's Plan and Procedures, and mitigation measures detailed in this document, to restore and revegetate the disturbed areas following construction. Revegetation includes seeding, and a mix of seed that was collected in the Park would be applied to the disturbed areas following construction. This seed mix would ensure that the vegetation structure, composition, abundance, and diversity of the area will be replicated in the seeded areas. Therefore, the Preferred Alternative impacts to vegetation resources, once mitigated, are anticipated to be negligible.

Cumulative Impacts: Past and present visitor use has contributed to gradual loss of vegetation from unauthorized use of the pipeline ROW as a hiking trail, and past construction and maintenance of the pipeline and ROW has resulted in the loss of vegetation in the ROW. The planned revegetation and restoration efforts would off-set and minimize the long-term impacts to vegetation in the project area. Mitigation measures implemented during construction would also help prevent vegetation loss. Impacts to vegetation from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies, which would be implemented as needed to ensure negligible cumulative impacts to vegetation. When combined with other past, present, and foreseeable future actions that would result in impacts to vegetation, the Preferred Alternative, once mitigated, would contribute a negligible amount of vegetation loss in the project area to the cumulative scenario.

Conclusion: Impacts on vegetation in this area due to the Preferred Alternative, once mitigated, would be adverse, short-term, and of negligible intensity. Revegetation and restoration efforts are planned to off-set and minimize the direct impacts to vegetation in the project area. Impacts to vegetation from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies, which would be implemented as needed to ensure negligible cumulative impacts to vegetation. When combined with other past, present, and foreseeable future

actions that would result in impacts to vegetation, this alternative would contribute a negligible amount of vegetation loss to the cumulative scenario.

Species of Special Concern/Unique or Important Wildlife or Wildlife Habitat

Methodology and Intensity Level Thresholds

Identification of state and federally listed species and designated critical habitats was accomplished through communications with Park staff, reviewing the Arizona Game and Fish Department online heritage database, and reviewing the USFWS list of threatened and endangered species for Pima County, Arizona.

The thresholds for this impact assessment are as follows:

- Negligible:** No federal or state listed species would be affected, or the alternative would affect an individual of a listed species or its critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population.
- Minor:** The action would affect an individual(s) of a listed species or its critical habitat, but the change would be small. The impact would be site-specific and short-term. Mitigation measures, if needed to offset adverse impacts, would be simple and successful.
- Moderate:** An individual or population of a listed species or its critical habitat would be noticeably affected. The effect could have some long-term consequence to the individual, population, or habitat. The impact could be site-specific or local in context. State species of concern could also be affected. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- Major:** An individual or population of a listed species or its critical habitat would be noticeably affected with a long-term, vital consequence to the individual, population, or habitat. The impact would be local or regional in context. Extensive mitigation measures would be needed to offset adverse effects, and their success would not be guaranteed.
- Impairment:** Major, adverse impact to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents.

Impacts of Alternative 1 – No Action

Impact Analysis: There would be no effect to any federally listed threatened or endangered species from the No Action Alternative because no construction would take place.

Cumulative Impacts: Impacts to species of special concern or unique or important wildlife or wildlife habitat from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to sensitive wildlife species and wildlife habitat, the No Action Alternative would have no impact to species of special concern or unique or important wildlife species or wildlife habitat in the cumulative scenario.

Conclusion: The No Action Alternative would not result in impacts to species of special concern or unique or important wildlife species or wildlife habitat because construction would not take place. Impacts to species of special concern or unique or important wildlife or wildlife habitat from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to sensitive wildlife species and wildlife habitat, this alternative would not have impacts on the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: Indirect impacts to special status species or wildlife from the Preferred Alternative would be primarily in the short-term alteration in habitat at three locations on Park lands. The three temporary workspace areas total approximately 0.57 acre. Impacts would occur from clearing of vegetation and the crushing of forbs and grasses from the operation of equipment and vehicles, and the creation of soil piles during excavation activities. Impacts would be minimized through the implementation of the FERC's Plan and Procedures, and other mitigation measures detailed in this document, to restore and revegetate the disturbed areas following construction. A BE was completed for the project and it was determined that the project would have no effect to any federally listed threatened or endangered species that occur in Pima County. There is no designated critical habitat located in the project area. Sonoran Desert tortoise and Gila monster are known to occur in the vicinity of the project. The use of biological monitors during construction and the participation of construction workers in a pre-construction, sensitive-species awareness workshop would ensure that the project will minimize the potential to impact individual tortoises or Gila monsters in the project area. The disturbed areas would be restored and re-vegetated to industry and Park standards. Therefore, the Preferred Alternative impacts to special status species and wildlife habitat, once mitigated, are anticipated to be minor. A biological evaluation was completed in 2009 (SWCA 2009a) for the Preferred Alternative and the Park's biologist has concurred with the finding of no effect for species protected by the Endangered Species Act. In addition, the Park's biologist has determined that species of special concern, unique or important wildlife or wildlife habitat will not be adversely impacted by the Preferred Alternative, once mitigated with the measures detailed in this document.

Cumulative Impacts: The use of biological monitors during construction and the participation of construction workers in a preconstruction, sensitive-species awareness workshop would ensure that the project will minimize the potential to directly impact individual tortoises or Gila monsters. The planned revegetation and restoration efforts would off-set and minimize the long-term indirect impacts to vegetation (i.e., wildlife habitat) in the area. Mitigation measures implemented during construction would also help prevent vegetation (i.e., wildlife habitat) loss. Impacts to species of special concern or unique or important wildlife or wildlife habitat from the construction of trails or from the control of noxious or invasive species would be subject to National Park Policies and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions in the project area that would result in impacts to species of special concern, unique or important wildlife or wildlife habitat, the Preferred Alternative, once mitigated, would contribute a negligible amount of impacts to the cumulative scenario.

Conclusion: Impacts on sensitive wildlife species and wildlife habitat in this area attributable to the Preferred Alternative would be adverse, short-term, and of negligible intensity. Revegetation and restoration efforts are planned to off-set and minimize the long-term direct impacts to vegetation (i.e., wildlife habitat) in the area. Impacts to species of special concern or unique or important wildlife or wildlife habitat from the construction of trails or from the control of noxious or invasive

species would be subject to National Park Policies and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to species of special concern, unique or important wildlife or wildlife habitat in the project area, this alternative would contribute a negligible amount to the cumulative scenario.

Non-Native Species

Methodology and Intensity Level Thresholds

Analyses of the potential intensity of impacts to non-native species were derived from the available scientific data and literature, professional judgment, and Park staff's past observations of the effects on non-native species from visitor use and construction/maintenance activities.

The thresholds of change for the intensity of an impact are defined as follows:

- Negligible:** The action would not create an opportunity for establishment of non-native species and would not introduce non-native seed into the environment.
- Minor:** The action would introduce non-native species and cause limited alteration to native vegetation composition, abundance, and diversity. Non-natives could become established but likely would not spread beyond the project area. Mitigation measures, if needed, would be simple and successful.
- Moderate:** The action would introduce non-native species to cause alterations to native vegetation composition, abundance, and diversity. Non-natives would likely become established and could spread beyond project area, impacting native plants. Mitigation measures, if needed to offset adverse effects, could be extensive but would likely be successful.
- Major:** The action would introduce non-native species to cause substantial alteration to native vegetation composition, abundance, and diversity. The spread of non-natives through the Park would be so extensive it would alter the ecology of the park. Extensive mitigation measures would be needed to offset adverse effects, and their success would not be guaranteed.
- Impairment:** Major, adverse impact(s) to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents.

Impacts of Alternative 1 – No Action

Impact Analysis: Under the No Action Alternative, there would be no increase in the potential for construction equipment to introduce non-native seeds to the project area, therefore there would be no impacts from construction activities.

Cumulative Impacts: Impacts to Park resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to non-native species, the No Action Alternative would contribute no impacts to the cumulative scenario.

Conclusion: The No Action Alternative would not create an opportunity for establishment of non-native species and would not introduce non-native seed into the environment. Impacts to Park

resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in non-native species impacts, this alternative would not contribute to the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: Surveys of the project area conducted for this project identified no federally listed noxious or invasive species in the project area. Impacts from non-native species through the implementation of the Preferred Alternative would be limited to the potential for the introduction of noxious or invasive plant species to the project area by the importation of seed on construction equipment, vehicles, or personnel. The potential for the introduction of noxious or invasive weeds to the project area would be mitigated by the implementation of a program for inspection and treatment (e.g., power washing) of vehicles and equipment prior to entering the project area. In addition, any materials that are to be brought in (fill, gravel, etc.) must be inspected prior to coming on-site. Therefore, the Preferred Alternative impacts to non-native species, once mitigated, are anticipated to be minor.

Cumulative Impacts: Implementation of mitigation measures, such as the use of off-site power washers on all equipment and vehicles brought into the Park during construction, would minimize the potential for establishment of non-native species in the project area and would minimize the opportunity to introduce non-native seed into the environment. Impacts to Park resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts by non-native species in the project area, the Preferred Alternative would contribute a minor amount of impact to the cumulative scenario.

Conclusion: Impacts from the Preferred Alternative would be limited to the potential to create an opportunity for establishment of non-native species and to introduce non-native seed into the project area. Implementation of mitigation measures, such as the use of off-site power washers on all equipment and vehicles brought into the Park during construction, would minimize the potential for establishment of non-native species and would minimize the opportunity to introduce non-native seed into the environment. Impacts to Park resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts from non-native species in the project area, this alternative would contribute a minor amount to the cumulative scenario.

Recreation Resources—Trail Routes and Visitor Use and Experience

Methodology and Intensity Level Thresholds

Saguaro National Park was established to protect the diversity of cacti species including the giant saguaro cactus. The Park encompasses a rich diversity of Sonoran Desert life found within a framework of historic and prehistoric human occupation. Park management must assure that these natural and cultural resources are managed in such a manner as would leave them unimpaired for the enjoyment of future generations. The methodology used for assessing impacts to trail routes

and visitor use and experience is based on how pipeline repair activities would affect the trail routes and visitors, including safety considerations and maintaining the resource for future generations to enjoy. The thresholds for this impact assessment are as follows:

- Negligible:** Trail routes or 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 action.
- Minor:** Changes in trail routes or 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 action, but the effects would be slight.
- Moderate:** Changes in trail routes or visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the action, and would likely be able to express an opinion about the changes.
- Major:** Changes in trail routes or 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 1 – No Action

Impact Analysis: The No Action Alternative could result in adverse, long-term, moderate impacts to visitor use and public safety in the immediate area of the pipeline by the presence of un-remediated hazardous conditions that would leave the pipeline susceptible to corrosion and failure.

Cumulative Impacts: Impacts to recreational resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to recreational resources in the project area, the No Action Alternative could contribute adverse, long-term, moderate impacts to the cumulative scenario due to increasingly un-remediated hazardous conditions along the exposed pipelines.

Conclusion: The No Action Alternative could result in adverse, long-term, moderate impacts to visitor use and public safety in the immediate area of the pipeline by the presence of un-remediated hazardous conditions that would leave the pipeline susceptible to corrosion and failure. Impacts to recreational resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in recreational resources impacts in the project area, the No Action Alternative would contribute moderate adverse impacts to the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: Impacts to recreation and visitor use and experience from the Preferred Alternative would be short-term and limited to during construction and restoration activities in the project area, and while vegetation re-establishes in the temporary workspace disturbance areas. Because the impacts will be adjacent to an existing disturbed pipeline ROW, impacts to visitor use or experience are expected to be adverse, short-term, and of negligible intensity in the project area. Impacts to trails are also expected to be adverse, short-term, and of negligible intensity in the project area as impacts from the Preferred Alternative on a new trail and trailhead proposed for the

pipeline ROW would likely not be detectable by visitors after construction and restoration efforts are complete.

Cumulative Impacts: Revegetation and restoration efforts are planned to off-set and minimize the short-term, adverse impacts to the area by the Preferred Alternative. Impacts to recreational resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to recreational resources in the project area, the Preferred Alternative would contribute a negligible amount of impact to the cumulative scenario.

Conclusion: The Preferred Alternative, once mitigated, would negligibly impact recreational resources in the project area. Trail routes or visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection in the project area. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the action. Impacts to recreational resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies, Clean Water Act and Endangered Species Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to recreational resources in the project area, the Preferred Alternative would contribute a negligible amount of impact to the cumulative scenario.

Archeological Resources

Methodology and Intensity Thresholds

In order for an archeological resource to be eligible for the NRHP, and thereby considered a historic property under Section 106 of the National Historic Preservation Act, it must meet one or more of the NRHP criteria of significance. These criteria are discussed in National Register Bulletin #15 (Shrimpton 1997) and Bulletin #36 (Little et al. 2000) and read as follows:

- A) that are associated with events that have made a significant contribution to the broad patterns of our history;
- B) that are associated with the lives of persons significant in our past;
- C) that embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- D) that have yielded, or may be likely to yield, information important in prehistory or history.

In addition, archeological resources must possess integrity of location, design, setting, materials, workmanship, feeling, association. For purposes of analyzing impacts to archeological resources either listed or eligible to be listed on the NRHP, the thresholds of change for intensity of an impact are defined below:

Negligible: Impacts to archeological resources, either beneficial or adverse, are at the lowest levels of detection, barely perceptible and not measurable.

Minor: *Adverse:* Disturbance of a site(s) results in little, if any, loss of significance or integrity and the NRHP eligibility of the site(s) is unaffected.

Beneficial: Maintenance preservation of a site(s).

Moderate: *Adverse:* Disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its NRHP eligibility is jeopardized.

Beneficial: Stabilization of the site(s).

Major: *Adverse:* Disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed on the NRHP.

Beneficial: Stabilization of the site(s).

Impacts of Alternative 1 – No Action

Impact Analysis: Under the No Action Alternative, there would be no impacts to archaeological resources because construction activities would not occur.

Cumulative Impacts: Impacts to archaeological resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies and National Historic Preservation Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to archaeological resources in the project area, the No Action Alternative would not contribute impacts to the cumulative scenario.

Conclusion: The No Action Alternative would not result in impacts to archaeological resources. Impacts to archaeological resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies and National Historic Preservation Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to archaeological resources, this alternative would not contribute to the cumulative scenario.

Impacts of Preferred Alternative – Repair EPNG Line No. 1008

Impact Analysis: One historic property—an archaeological site—was identified in the area of potential effect; however, it is in an area where no ground disturbance is proposed. On June 8, 2010, the Park initiated Section 106 review with the Arizona State Historic Preservation Officer (SHPO) by sending a copy of the archaeological survey report and a letter requesting concurrence of a No Adverse Effect to Historic Properties finding. On July 7, 2010, the SHPO concurred with the No Adverse Effect finding. Therefore, the Preferred Alternative impacts to archaeological resources are anticipated to be negligible.

Cumulative Impacts: Impacts to archaeological resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies and National Historic Preservation Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to archaeological resources in the project area, the Preferred Alternative would not contribute impacts to the cumulative scenario.

Conclusion: The Preferred Alternative would not result in adverse impacts to archaeological resources in the project area. Impacts to archaeological resources or values from the construction of trails or control of noxious or invasive species would be subject to National Park Policies and National Historic Preservation Act regulations, which would be implemented as needed to ensure negligible cumulative impacts. When combined with other past, present, and foreseeable future actions that would result in impacts to archaeological resources in the project area, this alternative would not contribute to the cumulative scenario.

Chapter 5

CONSULTATION AND COORDINATION

Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from the Park. Interdisciplinary team members met with representatives of EPNG and SWCA on September 11, 2009, 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. The results of the internal scoping are documented in this EA.

External Scoping

External scoping was initiated with the distribution of a scoping bulletin to inform the public of the proposal to repair the exposed natural gas pipeline, and to identify issues that should be considered in the preparation of this EA. The scoping bulletin dated April 15, 2010, was mailed to over 70 individuals and organizations known to be interested in this type of project at the Park, including 30 adjacent landowners. The scoping bulletin was also posted on the NPS Planning, Environment, and Public Comment website (<http://parkplanning.nps.gov/>). Consultation letters were sent to eight tribal entities.

During the 30-day scoping period, three responses were received. None of the three responses expressed opposition to the project, two responders agreed with the need for the repair of the pipeline exposures, and two responders made additional comments outside the scope of this analysis. One response indicated concerns about impacts to vegetation and the need for complete restoration of impacted vegetation, and another comment concerned securing the ROW to keep out unauthorized off-road motorized vehicle traffic. One commenter was concerned that the portion of the project area on private property to the south was not included in the proposed activity, but should be included.

The proposal includes restoration and re-vegetation measures, and Park imposed mitigation measures, that address the concerns related to impacts to vegetation in the project area. The ROW is currently secured from vehicular traffic by gates located at both the north and south end of the ROW at the Park boundaries; these gates currently are used to allow Park and EPNG vehicles access and are locked from public motorized use. The two pipeline exposure areas located south of the Park boundaries, on private property, are included in the proposed action description and are evaluated in the cumulative impacts section of this document.

List of Recipients and Public Review

The EA will be released for public review on September 17, 2010. To inform the public of the availability of the EA, the NPS will publish and distribute a letter to various agencies, and members of the public on the National Park's mailing list, as well as place an ad in the local newspaper. Copies of the EA will be provided to interested individuals upon request. Copies of the document will also be available for review at the National Park's visitor center and on the internet at the NPS Planning, Environment, and Public Comment website (<http://parkplanning.nps.gov/sagu>).

The EA is subject to a 30-day public comment period ending October 17, 2010. During this time, the public is encouraged to submit their written comments to the NPS 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 NPS will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the EA, as needed.

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Appendix A

FERC'S UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN AND WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

**UPLAND EROSION CONTROL, REVEGETATION, AND
MAINTENANCE PLAN**

01/17/2003 VERSION

**UPLAND EROSION CONTROL, REVEGETATION, AND
MAINTENANCE PLAN**

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**UPLAND EROSION CONTROL, REVEGETATION,
AND MAINTENANCE PLAN (PLAN)**

I. APPLICABILITY

- A. The intent of this Plan is to assist applicants by identifying baseline mitigation measures for minimizing erosion and enhancing revegetation. The project sponsors should specify in their applications for a FERC Certificate (Certificate) any individual measures in this Plan they consider unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Applicants should also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is certificated, further changes can be approved. Any such changes from the measures in this Plan (or the applicant's approved plan) will be approved by the Director of the Office of Energy Projects (Director), upon the applicant's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;
2. is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in this Plan to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on wetland and waterbody systems are addressed in the staff's Wetland and Waterbody Construction and Mitigation Procedures (Procedures).

II. SUPERVISION AND INSPECTION

A. ENVIRONMENTAL INSPECTION

1. At least one Environmental Inspector is required for each construction spread during construction and restoration (as defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.
2. Environmental Inspectors shall have peer status with all other activity inspectors.
3. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the Certificate, state and Federal environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

B. RESPONSIBILITIES OF ENVIRONMENTAL INSPECTORS

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Ensuring compliance with the requirements of this Plan, the Procedures, the environmental conditions of the Certificate authorization, the mitigation measures proposed by the applicant (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements;
2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
4. Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;

5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the location of dewatering structures and slope breakers will not direct water into known cultural resources sites or locations of sensitive species;
7. Verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity shall be stopped and the design of the discharge shall be changed to prevent reoccurrence;
8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;
9. Advising the Chief Construction Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting;
10. Ensuring restoration of contours and topsoil;
11. Verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
12. Determining the need for and ensuring that erosion controls are properly installed, as necessary to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;
13. Inspecting and ensuring the maintenance of temporary erosion control measures at least:
 - a. on a daily basis in areas of active construction or equipment operation;
 - b. on a weekly basis in areas with no construction or equipment operation; and
 - c. within 24 hours of each 0.5 inch of rainfall;

14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;
15. Keeping records of compliance with the environmental conditions of the FERC certificate, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other Federal or state environmental permits during active construction and restoration; and
16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

III. PRECONSTRUCTION PLANNING

The project sponsor shall do the following before construction:

A. CONSTRUCTION WORK AREAS

1. Identify all construction work areas (e.g., construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) that would be needed for safe construction. The project sponsor must ensure that appropriate cultural resources and biological surveys have been conducted.
2. Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of certificated work areas.

B. DRAIN TILE AND IRRIGATION SYSTEMS

1. Attempt to locate existing drain tiles and irrigation systems.
2. Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.
3. Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.

4. Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.

C. GRAZING DEFERMENT

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

D. ROAD CROSSINGS AND ACCESS POINTS

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

E. DISPOSAL PLANNING

Determine methods and locations for the disposal of construction debris (e.g., timber, slash, mats, garbage, drilling fluids, excess rock, etc). Off-site disposal in other than commercially operated disposal locations is subject to compliance with all applicable survey, landowner permission, and mitigation requirements.

F. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and Federal agencies as outlined in this Plan and in the Certificate.

1. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
2. Develop specific procedures in coordination with the appropriate agency to prevent the introduction or spread of noxious weeds and soil pests resulting from construction and restoration activities.

G. STORMWATER POLLUTION PREVENTION PLAN

Make available on each construction spread the Stormwater Pollution Prevention Plan prepared for compliance with the U.S. Environmental Protection Agency's National Stormwater Program General Permit requirements.

IV. INSTALLATION

A. APPROVED AREAS OF DISTURBANCE

1. Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the Certificate. Any project-related ground disturbing activities outside these Certificated areas, except those needed to comply with the Plan and Procedures (e.g., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) will require prior Director approval. All construction or restoration activities outside of the Certificated areas are subject to all applicable survey and mitigation requirements.
2. The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a Certificate condition. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (such as side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists.

Project use of these additional limited areas is subject to landowner approval and compliance with all applicable survey and mitigation requirements. When such additional areas are used, each one should be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material should be included in the reports:

- a. the location of each additional area by station number and reference to a previously filed alignment sheet, or updated alignment sheets showing the additional areas;
- b. identification of where the Commission's records contain evidence that the additional areas were previously surveyed; and

- c. a statement that landowner approval has been obtained and is available in project files.

Prior written approval of the Director is required when the Certificated construction right-of-way width would be expanded by more than 25 feet.

B. TOPSOIL SEGREGATION

1. Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in:
 - a. actively cultivated or rotated croplands and pastures;
 - b. residential areas;
 - c. hayfields; and
 - d. other areas at the landowner's or land managing agency's request.
2. In residential areas importation of topsoil is an acceptable alternative to topsoil segregation.
3. In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil. In soils with less than 12 inches of topsoil make every effort to segregate the entire topsoil layer.
4. Where topsoil segregation is required, maintain separation of salvaged topsoil and subsoil throughout all construction activities.
5. Segregated topsoil may not be used for padding the pipe.

C. DRAIN TILES

1. Mark locations of drain tiles damaged during construction.
2. Probe all drainage tile systems within the area of disturbance to check for damage.

3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs.
4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

D. IRRIGATION

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

E. ROAD CROSSINGS AND ACCESS POINTS

1. Maintain safe and accessible conditions at all road crossings and access points during construction.
2. If crushed stone access pads are used in residential or active agricultural areas, place the stone on synthetic fabric to facilitate removal.

F. TEMPORARY EROSION CONTROL

Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

1. Temporary Slope Breakers
 - a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.

- b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing should be used if necessary):

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 - 15	300
>15 - 30	200
>30	100

- c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.
- d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.

2. Sediment Barriers

- a. Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. They may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., driveable berms across travelways), sand bags, or other appropriate materials.
- b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

- c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.
3. Mulch
- a. Apply mulch on all slopes (except in actively cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing.
 - b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent.
 - c. Mulch before seeding if:
 - (1) final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or
 - (2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.
 - d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent.
 - e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release).

- f. Ensure that mulch is adequately anchored to minimize loss due to wind and water.
- g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies.
- h. Install erosion control fabric on waterbody banks at the time of final bank recontouring. Anchor the erosion control fabric with staples or other appropriate devices.

V. RESTORATION

A. CLEANUP

1. Commence cleanup operations immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (temporary slope breakers and sediment barriers) until conditions allow completion of cleanup.

The project sponsor should file with the Secretary for the review and written approval of the Director, a winterization plan if construction will continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

2. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed (as specified in section IV.F.) and inspected and maintained (as specified in sections II.B.12 through 14). When access is no longer required, the travel lane must be removed and the right-of-way restored.
3. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.

4. Remove excess rock from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. The landowner may approve other provisions in writing.
5. Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.
6. Remove construction debris from all construction work areas unless the landowner or land managing agency approves otherwise.
7. Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

B. PERMANENT EROSION CONTROL DEVICES

1. Trench Breakers
 - a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.
 - b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.
 - c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.
 - d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

2. Permanent Slope Breakers

- a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent.
- b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, using spacing recommendations obtained from the local soil conservation authority or land managing agency.

In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 - 15	300
>15 - 30	200
>30	100

- c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker.
- d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

C. SOIL COMPACTION MITIGATION

1. Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.

2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.

Alternatively, make arrangements with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

D. REVEGETATION

1. General

- a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b.
- b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

2. Soil Additives

Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as possible after application.

3. Seeding Requirements

- a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed.

- b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or as requested by the landowner or land management agency. Seeding is not required in actively cultivated croplands unless requested by the landowner.
- c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section IV.F. and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Lawns may be seeded on a schedule established with the landowner.
- d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a-c.
- e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing.
- f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro).
- g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application.

Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or impriner after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.

VI. OFF-ROAD VEHICLE CONTROL

To each owner or manager of forested lands offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

- A. Signs;
- B. Fences with locking gates;
- C. Slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and
- D. Conifers or other appropriate trees or shrubs across the right-of-way.

VII. POST-CONSTRUCTION ACTIVITIES

A. MONITORING AND MAINTENANCE

- 1. Conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation.
- 2. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful if crop yields are similar to adjacent undisturbed portions of the same field.

Continue revegetation efforts until revegetation is successful.

- 3. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas until restoration is successful.
- 4. Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless requested otherwise by the land owner or land managing agency), revegetation is successful, and proper drainage has been restored.

5. Routine vegetation maintenance clearing shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained annually in a herbaceous state. In no case shall routine vegetation maintenance clearing occur between April 15 and August 1 of any year.
6. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary.

B. REPORTING

1. The project sponsor shall maintain records that identify by milepost:
 - a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
 - b. acreage treated;
 - c. dates of backfilling and seeding;
 - d. names of landowners requesting special seeding treatment and a description of the follow-up actions; and
 - e. any problem areas and how they were addressed.
2. The project sponsor shall file with the Secretary quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for at least 2 years following construction.

**WETLAND AND WATERBODY CONSTRUCTION AND
MITIGATION PROCEDURES**

01/17/2003 VERSION

**WETLAND AND WATERBODY CONSTRUCTION AND
MITIGATION PROCEDURES**

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**WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES
(PROCEDURES)**

I. APPLICABILITY

- A. The intent of these Procedures is to assist applicants by identifying baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies. The project sponsors should specify in their applications for a FERC Certificate (Certificate) any individual measures in these Procedures they consider unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Applicants should also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is certificated, further changes can be approved. Any such changes from the measures in these Procedures (or the applicant's approved procedures) will be approved by the Director of the Office of Energy Projects (Director), upon the applicant's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in these Procedures to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

B. DEFINITIONS

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
 - a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing;
 - b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and
 - c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current Federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

- A. The following information shall be filed with the Secretary prior to the beginning of construction:
 1. the hydrostatic testing information specified in section VII.B.3. and a wetland delineation report as described in section VI.A.1., if applicable; and
 2. a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any designated coldwater fishery. The project sponsor shall revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice.
- B. The following site-specific construction plans required by these Procedures must be filed with the Secretary for the review and written approval by the Director:
 1. plans for extra work areas that would be closer than 50 feet from a waterbody or wetland;

2. plans for major waterbody crossings;
3. plans for the use of a construction right-of-way greater than 75 feet wide in wetlands; and
4. plans for horizontal directional drill (HDD) "crossings" of wetlands or waterbodies.

III. ENVIRONMENTAL INSPECTORS

- A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.
- B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

IV. PRECONSTRUCTION PLANNING

- A. A copy of the Stormwater Pollution Prevention Plan (SWPPP) prepared for compliance with the U.S. Environmental Protection Agency's (EPA) National Stormwater Program General Permit requirements must be available in the field on each construction spread. The SWPPP shall contain Spill Prevention and Response Procedures that meet the requirements of state and Federal agencies.
 1. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that:
 - a. all employees handling fuels and other hazardous materials are properly trained;
 - b. all equipment is in good operating order and inspected on a regular basis;

- c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads;
 - d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector finds, in advance, no reasonable alternative and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
 - e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas; and
 - f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use.
2. The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must:
- a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills;
 - b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;

- c. know the contact names and telephone numbers for all local, state, and Federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and
- d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and Federal agencies as outlined in these Procedures and in the Certificate.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

- 1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.
- 2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.
- 3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.
- 4. Notify appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

- a. coldwater fisheries - June 1 through September 30; and
- b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.
- b. The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from the water's edge, (except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.
- c. Limit clearing of vegetation between extra work areas and the edge of the waterbody to the certificated construction right-of-way.
- d. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

- a. Comply with the COE, or its delegated agency, permit terms and conditions.

- b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
 - c. If the pipeline parallels a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way.
 - d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
 - e. Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.
 - f. Waterbody buffers (extra work area setbacks, refueling restrictions, etc.) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
4. Spoil Pile Placement and Control
- a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.
 - b. Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any waterbody.
5. Equipment Bridges
- a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.

- b. Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:

- (1) equipment pads and culvert(s);
- (2) equipment pads or railroad car bridges without culverts;
- (3) clean rock fill and culvert(s); and
- (4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

- c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
- d. Design and maintain equipment bridges to prevent soil from entering the waterbody.
- e. Remove equipment bridges as soon as possible after permanent seeding unless the COE, or its delegated agency, authorizes it as a permanent bridge.
- f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove equipment bridges as soon as possible after final cleanup.

6. Dry-Ditch Crossing Methods

- a. Unless approved otherwise by the appropriate state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries.

b. Dam and Pump

- (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.
- (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:
 - (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
 - (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
 - (iii) screen pump intakes;
 - (iv) prevent streambed scour at pump discharge; and
 - (v) monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

c. Flume Crossing

The flume crossing method requires implementation of the following steps:

- (1) install flume pipe after blasting (if necessary), but before any trenching;
- (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required in to achieve an effective seal);
- (3) properly align flume pipe(s) to prevent bank erosion and streambed scour;
- (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and

- (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill (HDD)

To the extent they were not provided as part of the pre-certification process, for each waterbody or wetland that would be crossed using the HDD method, provide a plan that includes:

- (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- (2) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- (3) a contingency plan for crossing the waterbody or wetland in the event the directional drill is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and

- c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

9. Crossings of Major Waterbodies

Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan should be developed in consultation with the appropriate state and Federal agencies and should include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

- a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. In the travel lane, these may consist of removable sediment barriers or driveable berms. Removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;
- b. where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and
- c. use trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

C. RESTORATION

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.
2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.
4. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
5. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.
6. Revegetate disturbed riparian areas with conservation grasses and legumes or native plant species, preferably woody species.
7. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.
8. Sections V.C.3. through V.C.6. above also apply to those perennial or intermittent streams not flowing at the time of construction.

D. POST-CONSTRUCTION MAINTENANCE

1. Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees that are located within 15 feet of the pipeline that are greater than 15 feet in height may be cut and removed from the permanent right-of-way.
2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.

VI. WETLAND CROSSINGS

A. GENERAL

1. The project sponsor shall conduct a wetland delineation using the current Federal methodology and file a wetland delineation report with the Secretary before construction. This report shall identify:
 - a. by milepost all wetlands that would be affected;
 - b. the National Wetlands Inventory (NWI) classification for each wetland;
 - c. the crossing length of each wetland in feet; and
 - d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where existing soils lack adequate unconfined compressive strength that would result in excessively wide ditches and/or difficult to contain spoil piles.
4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
5. Implement the measures of sections V. and VI. in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V. and VI. cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:
 - a. spoil control;
 - b. equipment bridges;
 - c. restoration of waterbody banks and wetland hydrology;
 - d. timing of the waterbody crossing;

- e. method of crossing; and
 - f. size and location of all extra work areas.
6. Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. INSTALLATION

1. Extra Work Areas and Access Roads

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.
- b. The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from wetland boundaries (except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.
- c. Limit clearing of vegetation between extra work areas and the edge of the wetland to the certificated construction right-of-way.
- d. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

- e. The only access roads, other than the construction right-of-way, that can be used in wetlands without Director approval, are those existing roads that can be used with no modification and no impact on the wetland.

2. Crossing Procedures

- a. Comply with COE, or its delegated agency, permit terms and conditions
- b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- c. Use "push-pull" or "float" techniques to place the pipe in the trench where water and other site conditions allow.
- d. Minimize the length of time that topsoil is segregated and the trench is open.
- e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.
- f. Cut vegetation just aboveground level, leaving existing root systems in place, and remove it from the wetland for disposal.

- g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.
- h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated or frozen. Immediately after backfilling is complete, restore the segregated topsoil to its original location.
- i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.
- j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.
- k. Do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats.
- l. Attempt to use no more than two layers of timber riprap to support equipment on the construction right-of-way.
- m. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.

3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c., maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

- a. Install sediment barriers across the entire construction right-of-way at all wetland crossings where necessary to prevent sediment flow into the wetland. In the travel lane, these may consist of removable sediment barriers or driveable berms. Removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent
- b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetland.
- c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any wetland. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

C. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of a slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
3. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate land management or state agency.
4. Consult with the appropriate land management or state agency to develop a project-specific wetland restoration plan. The restoration plan should include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.
5. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).
6. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.

7. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.5. of the Plan.

D. POST-CONSTRUCTION MAINTENANCE

1. Do not conduct vegetation maintenance over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent right-of-way.
2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate land management agency or state agency.
3. Monitor and record the success of wetland revegetation annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts. Include the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). Continue to file a report annually until wetland revegetation is successful.
4. Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate the wetland. Continue revegetation efforts until wetland revegetation is successful.

VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.
2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.
3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform non-destructive testing of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.
2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address the operation and refueling of these pumps in the project's Spill Prevention and Response Procedures.
3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location.

C. INTAKE SOURCE AND RATE

1. Screen the intake hose to prevent entrainment of fish.
2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and/or local permitting agencies grant written permission.
3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.

4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.
2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission.

Appendix B

SAGUARO NATIONAL PARK STANDARD MITIGATION MEASURES

Cultural Resources

- All sites where ground disturbance may occur must be surveyed/cleared by a qualified archeologist, and/or cultural resource specialist.
- Project workers should be trained in cultural site awareness to learn how to identify and avoid archeological and historical resources on the ground. Workers should additionally be aware of penalties for illegally collecting artifacts, or intentionally damaging any archeological or historic property in the vicinity.
- Project managers will be advised of the sensitivity of any known relevant archeological sites or historic resources, and ensure that project workers behave accordingly. For example, when clearance is given where known archeological resources occur in/near the project area, the Service should exercise caution. If concealed archeological resources are encountered during project activities, work will cease, and all necessary steps will be taken to protect the artifacts/site. Park Resource Management (RM) staff and the Park Consulting Archeologist will be notified immediately.
- When projects occur in the Rincon Mountain Foothills Archeological District (below 4,000' in the RMD, and not new lands), they are within the National Register of Historic Places and the Rincon Mountain Foothills Archeological District (RMFAD). If, per previous survey results, the project will not affect the cultural resources of the RMFAD, clearance to proceed is authorized unless concealed archeological resources are encountered during project activities. In this case, work will cease, and all necessary steps will be taken to protect the artifacts/site. Park Resource Management staff and the Park Consulting Archeologist will be notified immediately.
- If any cultural resources or objects are found/disturbed during work activities, work in that location must stop, and the procedures of 36 CFR 800.13(c) must be adhered to. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered, the regulations implementing the Native American Graves Protection and Repatriation Act (43CFR Part 10) must be followed. Work must cease, and all necessary steps must be taken to protect the artifacts/site. Park Resource Management staff and the Park Consulting Archeologist will be notified immediately. The Archeologist will assess the site before any work may proceed.
- When previous archeological surveys have not detected surface evidence of archeological resources, clearance to proceed is recommended. However, if concealed archeological resources are encountered during project activities, work must cease, and all necessary steps must be taken to protect the artifacts/site. Park Resource Management staff and the Park Consulting Archeologist will be notified immediately.

Natural Resources – Vegetation

- Ground disturbance and removal or impact to native vegetation will be minimized to the greatest extent possible.
- Wilderness-compatible techniques and tools (i.e., hand tools) will be used to conduct all backcountry maintenance, rehabilitation, and restoration work.
- Impacted areas will be restored/revegetated per consultation with the Park's Resource Management division.
- Every attempt will be made to avoid impacting any saguaro (*Carnegiea gigantea*). If saguaros less than 4' will be affected, they must be transplanted. Impact to saguaros greater than 4' requires additional assessment and/or mitigation measures, including salvage if possible.
- Below 4,000' elevation, trees greater than 4" in diameter at the base must not be removed.
- Any cactus other than prickly pear and cholla (*Opuntia spp.*) that must be removed, will be salvaged and/or transplanted.
- When needed or requested, a park biologist will provide restoration personnel with an orientation/briefing. The biologist will inform and educate project workers, about relevant threatened and endangered species, and other applicable natural resource issues.

Natural Resources – Prevent Establishment or Spread of Invasive Plant Species (II)

The following are standard operating procedures at Saguaro National Park for government employees, contractors, and partners, to prevent the introduction and/or spread of invasive, non-native plants. Contracts should include applicable mitigations, and provide plans to ensure they are followed. The park project manager/COR is responsible for compliance.

- Except in emergencies, all equipment originating outside the park (eg, backhoes, tractors, loaders, excavators, dozers, bobcats, wheeled compressors, helicopter skids, trucks and trailers that have traveled off-road) will be pressure or steam-washed prior to entry into the park to remove seeds and seed-containing soil/material.
- Construction and restoration materials (ie, boulders, soil, sand, gravel, road base, straw, silt and erosion control materials) must be free of invasive weed seeds or other propagative parts. Weed-free status may be ensured by pressure washing, steam washing, fumigation, heat sterilization, or certification from the supplier. For large quantities of materials that are prohibitively expensive to sterilize (eg, import soil, sand, gravel, or road base), weed-free materials can be ensured by an inspection and certification program of the quarry or source site. Potential sources must be inspected and certified by the National Park Service for noxious weeds prior to being accepted as a vendor. Many of the highly invasive, non-native plants that Saguaro National Park actively controls are not listed as noxious weeds by the State of Arizona; therefore, the park would require that the fill material be free of all non-native plants.
- For all applicable projects, the project manager and/or COR will be responsible for contacting RM staff to inspect sources. If weed-free sources cannot be found, the Superintendent may approve use of materials, but the cost for monitoring and weed control for up to four years must be built into the contract.

- Every attempt will be made to procure weed-free hay for the livestock operation at the park. However, since Arizona does not have a well established program, obtaining weed-free hay may be difficult or cost prohibitive. The Superintendent may approve the use of other materials. In Wilderness areas, pellets will be used to feed stock.

Natural Resources – Prevent Establishment or Spread of Invasive Plant Species (I)

The following are standard operating procedures at Saguaro National Park for government employees, contractors, and partners, to prevent the introduction and/or spread of invasive, non-native plants. Contracts should be prepared so these mitigations are followed. The park project manager/COR is responsible for compliance.

- For all ground disturbing projects, avoid or minimize the area of soil disturbance. Choose equipment that will result in the least disturbance to soil and vegetation. Use hand line rather than dozer line where possible. Consider using herbicides rather than digging out roots to remove non-native plants.
- On fires, resource advisors and incident staff should consult park RM staff when locating hand line and dozer line in areas known to have invasive plants. Dozer line and hand line should be located far from invasive species whenever possible. Planners should consult RM staff when aligning new trails to avoid patches of invasive plants.
- Minimize the frequency of soil disturbance. For example, disturbing an area once every five years creates less risk than disturbing it annually. If a site has to be cleared of vegetation yearly consider paving it.
- Avoid or minimize disturbance in areas infested with invasive plants. Minimize moving invasive plant species associated with gravel, rock and other fill materials to relatively weed-free areas. Do not stage construction or fire activities in high density areas of invasive plant species. Plan activities to limit the potential spread of invasive plant species. For example, plan ground disturbance activities so machinery is not transporting invasive plant seeds to new locations.
- Work with RM staff to develop revegetation plans to rehabilitate disturbed areas. The best methods of reveg/rehab for a particular disturbed area should be evaluated on a case-by-case basis.
- Revegetate/rehabilitate the impacted area, or cover the bare soil with local litter and duff mulch as soon as possible. Mulch provides a source of seeds to reestablish native vegetation, and it reduces the risk of invasive plant seeds from germinating. Ideally, the litter and duff should be collected from surrounding areas, but do not denude the collection area; leave at least 50% of the material in place and don't disturb vegetation.
- On fires, RM staff should be assigned as resource advisors to the incident management team whenever the spread of invasive plant species is probable. RM staff should be consulted in the development of fire line and burned area rehabilitation plans.
- When possible, RM staff should survey for, and remove invasive plants from future burn units and construction sites. This should be done at least one year before planned ignition, or at the start of construction. (Pre-construction surveys should be funded by construction projects.)

- Until impacted sites are fully revegetated, fund surveys for at least one year. Surveys should be conducted by qualified staff to detect invasive plants early, and prevent them from becoming a problem.
- Consider the risk of plant invasion when siting perpetually disturbed facilities, such as campgrounds and corrals. For example, campsites adjacent to meadows create a high risk for non-native plants to become established at the campsite and enter the meadow. Consider closure of such high-risk campsites.
- Burned Area Rehabilitation funding may be used for up to three years to monitor and treat non-native, invasive species. Monitoring actions ("assessments") are contingent upon known infestations, possibility of new infestation due to management actions, and suspected contaminated equipment use areas. Treatments may be used to prevent detrimental invasion from off-site, or invasive species introduced or aggravated by wildfire. See the *Interagency Burned Area Emergency Response Guidebook* for current policy.

Natural Resources – Wildlife

- When needed or requested, a park biologist will provide project personnel with an orientation/briefing. The biologist will inform and educate project workers about relevant threatened and endangered species, and other applicable natural resource issues.
- Caution must be exercised at worksites and in the vicinity to not disturb wildlife species (reptiles, migratory birds, raptors, or bats) found nesting, hibernating, estivating, or otherwise inhabiting the area.
- Resource Management personnel shall be notified/consulted when any wildlife must be disturbed or handled. RM personnel are available to assist with moving/relocating Gila monsters, snakes, and any other wildlife, when necessary. RM personnel may also make recommendations for relocating any disturbed wildlife species.
- For any projects involving trenching or digging holes, provisions (generally in the form of ramps with a slope $<45^\circ$) must be made every 20–50' to allow for the escape of animals that may fall into these recesses. These areas must also be covered in a manner that prevents animals (vertebrates) from falling into them.
- The Sonoran desert tortoise, a sensitive species, seeks shelter in burrows which are usually found on rocky slopes below boulders and rocks. Thus, holes and crevices large enough to house an adult tortoise ($>20\text{cm}$ wide at the opening) should not be disturbed. Any tortoise encountered or known to be in a burrow, must not be disturbed. If a tortoise's habitat is accidentally destroyed, the tortoise should be relocated to the nearest appropriate alternative burrow or habitat (consult with RM staff). If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist (consult with RM staff). Tortoises should be moved no more than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises must not be moved if the ambient air temperature exceeds 40°C (105°F) unless an alternate burrow is available, or the tortoise is in imminent danger.
- If desert tortoises are encountered at worksites (or elsewhere), they should not be disturbed unless they are in the path of imminent danger. If in imminent danger, desert tortoises can, and should be moved out of harm's way per Arizona Game and Fish Department's 1997

recommendations (following). Desert tortoises should be moved no further than necessary (less than 0.5 mile from their original location), and should be handled as little as possible.

- To move a tortoise, approach it from the front (giving it time to retract and prepare for an encounter). Grasp the tortoise gently but firmly with both hands: one on either side of the tortoise, between their front and back legs, and keep it in its normal orientation at all times. ***Do not turn a desert tortoise upside down!*** These steps will minimize the potential for the tortoise to void its bladder and lose its precious water store. Tortoises should be moved in the direction they were facing (on the other side of any nearby road it was headed towards), and placed in a shaded, protected site. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. If a release site or alternate burrow is unavailable within this distance, and ambient air temperature exceeds 40° Celsius (105° Fahrenheit), RM staff should be contacted.

Natural Resources – Threatened & Endangered Species

- Workers will be provided an orientation and/or otherwise advised of the sensitivity of the local threatened and endangered species and their habitats.
- In circumstances when it is deemed necessary to conduct activities near sites known to support threatened or endangered species, such work will be performed in a way (specified by the park's T&E Biologist) to minimize impacts to relevant listed species [e.g., working quietly on-site, and minimizing time in or near Mexican spotted owl protected activity centers (MSO PACs) and peregrine falcon eyries en route to their work sites; minimizing impacts to agave].
- When the breeding status of Mexican spotted owls (MSO) are unknown, it will be assumed that the owls are breeding, and appropriate action (or inaction) and/or mitigations implemented.
- Work will not occur in Mexican spotted owl Protected Activity Centers (PACS) during their breeding season (March 1–August 31), unless further analyzed/ assessed/mitigated.
- When it is necessary to work within MSO PACS during the breeding season (March 1–August 31):
 - all work will be conducted from/along existing trail corridors;
 - no MSO habitat features [i.e., large (>18" dbh) trees and snags and large down logs, multi-storied vegetation and dense canopy] will be disturbed;
 - work will be conducted in groups of five or less;
 - crews will work in a given PAC no longer than three consecutive days without a week long break;
 - less than ¼ mile of new trail construction or trail reroute shall occur in (all) MSO PACs in a given year;
 - work is to be conducted with hand tools only (no motorized/power tools);
 - activities will have minimal impact on the environment (per evaluation of a trained biologist), especially with regard to cutting trees (especially above 6,000').
- Activities will have minimal impact on agave plants (generally 4,000'–6,000' elevation).
- Additional, more specific, guidelines apply to fire and trail work per the most recent Environmental and Biological assessments of those activities.

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Appendix C

IMPAIRMENT ANALYSIS

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, 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.

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, topics remaining to be evaluated for impairment include geologic (soils) resources, water resources, vegetation resources, sensitive and threatened and endangered species, non-native species, and archaeological resources, .

Fundamental resources and values for Saguaro National Park are identified in the GMP. According to that document, of the impact topics carried forward in this environmental assessment, geologic, water, vegetation, sensitive and threatened and endangered species, non-native species, and archaeological 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.

- **Geological Resources** – An amazing variety of unique and complex processes took place to create the landforms of the park and surrounding region. This project involves impacts to soils from the trenching and compaction by construction equipment in an existing pipeline ROW. The soils in the project area would be rehabilitated as detailed in mitigation measures detailed in this document. Because there would be only minor impacts to resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents, there would be no impairment of the Park's geological resources.
- **Water Resources** – The natural hydrology of the region is composed of values that include quality, quantity, timing, distribution, and recharge processes. This project involves impacts to ephemeral drainages from construction activities that are regulated under the Clean Water Act. Therefore, a permit is required from the U.S. Army Corps of Engineers prior to construction that will ensure the project minimizes, to the maximum extent practicable, impacts to water resources by imposing numerous conditions, including the use of best management practices, to obtain coverage. Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents, there would be no impairment of the Park's water resources or values.
- **Vegetation Resources** – The Saguaro cactus and Arizona upland vegetative types occur in the project vicinity and are considered by the GMP to be resources that are central to managing the area and express the importance of the area to our natural heritage. No saguaro cacti would be impacted under the Preferred Alternative and only a minor amount of adverse impacts to vegetative resources (i.e., Arizona Upland vegetation) would occur.

Mitigation includes restoration and revegetation that would ensure that impacts are short-term and of minor intensity. Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents, there would be no impairment of the Park's vegetation resources or values.

- **Species of Special Concern/Unique or Important Wildlife or Wildlife Habitat** – The biodiversity of the Park, including ecological connections and biological interactions, and wildlife habitat connections are considered by the GMP to be central to managing the area and express the importance of the area to our natural heritage. A biological evaluation was completed for the project and it was determined that the project would have no impacts to species of special concern, including unique or important wildlife or wildlife habitat. Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents, there would be no impairment of the Park's species of special concern, unique or important wildlife or wildlife habitat resources.
- **Non-native Species** – The integrity of natural resource systems (e.g., exotic vs. native populations) is considered central to managing the area and expresses the importance of the area to our natural heritage (NPS 2007). The project has the potential to introduce non-native weed species to the project area ROW by transporting seeds on construction equipment. The implementation of a noxious weed management plan that includes the power washing of all equipment and vehicles prior to coming on site and the implementation of the other mitigation measures detailed in this document will ensure that the impacts will be minor. Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents, there would be no impairment of the Park's habitat resources or values from non-native species.
- **Archaeological Resources** – The GMP states that archaeological sites resources are central to managing the area and express the importance of the area to our cultural heritage. One historic property—an archaeological site—was identified in the area of potential effect; however, it is in an area where no ground disturbance is proposed. Consultation with the SHPO was completed for the Preferred Alternative, and the SHPO responded with a letter of concurrence that the repair of EPNG Line No. 1008 would result in no adverse effects to historic properties. Therefore, the Preferred Alternative impacts to archaeological resources are anticipated to be negligible. Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; 2) key to the natural or cultural integrity of the Park; or 3) identified as a goal in the Park's GMP or other relevant NPS planning documents, there would be no impairment of the Park's archaeological resources or values.

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.