National Park Service
U.S. Department of the Interior

Grand Canyon National Park
Arizona

NARROWBAND/DIGITAL RADIO SYSTEM CONVERSION

FINDING OF NO SIGNIFICANT IMPACT

The National Park Service (NPS) is proposing to convert all radio communications at Grand Canyon National Park (GRCA) from wideband/analog to narrowband/digital technology to be in compliance with federal regulations and policies. The park's radio system is a critical component necessary for managing and protecting park resources, in providing for public and employee health and safety, and in accomplishing all park management activities. The preferred alternative described in the May 2007 Environmental Assessment (EA) included construction of new radio repeaters, antennae, and shelters with radio repeater equipment at four primary sites (Grand Canyon Village Emergency Services Building, Hopi Point Fire Tower, Desert View Ranger Station, and CC Hill) and one secondary site (Mt. Emma), as well as an optional secondary site (Kanabownitz Fire Tower). Sites outside of the park include an optional primary site at Paria (Glen Canyon National Recreation Area), and two secondary sites at VT Ridge (Kaibab National Forest), and O'Leary Peak Fire Tower (Coconino National Forest). For the sites outside the park, environmental compliance requirements are being discussed with the respective agencies and will be considered separately.

The park's radio system is the key to ensuring the communication that allows the park to respond to public and employee health and safety needs, and to conduct park management activities in developed as well as remote backcountry areas. The park's current radio system provides wideband/analog radio coverage for the majority of the most-visited areas of the park; however, there are currently large areas within the park where radio communications are unreliable or impossible. In addition, the current equipment is also aging and becoming obsolete, and in increasing need of repair or replacement (e.g., some towers are showing signs of rust). The current system uses the full spectrum of wideband analog frequencies available to the NPS; therefore, additional frequency is not available for homeland security or other federal agencies. Wideband/analog is also not compatible with agencies that have already converted to narrowband/digital technology, as required by the law and regulations cited above.

OBJECTIVES OF THE ACTION

- Comply with federal regulations that require all federal agencies, including the National Park Service, to convert to narrowband radio communications
- Provide for improved park radio communications and coverage, to increase public and employee safety and the ability of the park to safely and effectively conduct park management activities
- Improve communications interoperability and services with other agencies

In May 2007 the National Park Service (NPS) prepared an *Environmental Assessment for Narrowband/Digital Radio System Conversion.* This EA, in accordance with the National Environmental Policy Act, analyzed the impacts that will likely result from implementation of the project. The EA evaluated one alternative for addressing the purpose and need for action (Alternative B). The EA also evaluated taking no action (Alternative A - No Action Alternative) for comparison with the action alternative. Alternative B is the preferred alternative.

PREFERRED ALTERNATIVE

Four primary sites would accomplish most of the needed communication improvements to meet the purpose and need for action identified in the EA. Three primary sites would be on the park's South Rim (Grand Canyon Village Emergency Services (EMS) Building, Hopi Point Fire Tower, and Desert View Ranger Station) and one would be on the North Rim (CC Hill near the North Kaibab Trailhead). An additional optional primary site (Paria) would be considered in Glen Canyon National Recreation Area on top of the Vermillion Cliffs near Lees Ferry.

Three secondary sites would provide important additional radio coverage to areas of the park that the primary sites cannot reach. One would be inside the park at the summit of Mt. Emma, west of Tuweep. The other two secondary sites would be outside the park, one in Kaibab National Forest north of the park (VT Ridge), and one in Coconino National Forest south of the park (O'Leary Peak Fire Tower). Another optional secondary site under consideration would be at Kanabownitz Fire Tower in the park on the North Rim, if needed for adequate radio coverage. Maps of the proposed radio repeaters within the Park along with photographs of the existing sites are provided as Appendix C of the EA.

All but three of the sites are part of the park's current radio system network and have some sort of radio repeaters and antennae that would be replaced at the same site adjacent to the current equipment (see Table 3 [pgs 12-15 of the EA] for site-specific information). The three new sites would be CC Hill, Grand Canyon Village EMS Building, and Desert View Ranger Station. All sites have varying levels of existing human disturbance. All sites except Kanabownitz would receive a new tower and antennae, a new shelter protecting new radio electronic equipment, perimeter fencing (at CC Hill, Desert View, Hopi Fire Tower, and Grand Canyon Village EMS), and varying levels of ground disturbance. The Kanabownits site would involve only in-kind replacement of antenna and electronic equipment on and inside the fire tower. All existing radio equipment would be removed from three historic buildings that are part of the park's current radio system network (i.e., Desert View Watchtower, Yavapai Observation Station, and Park Headquarters Building).

The sites at Hopi Fire Tower and Desert View Ranger Station have electricity very close to the repeater site and would likely require no ground disturbance to bring power to the new equipment. The site at CC Hill would require a trench for a powerline approximately 1,000 feet within an existing dirt road from the existing underground line to the proposed site. The site at Grand Canyon Village EMS would require a trench or overhead line for a powerline 50-100 feet from the existing Clinic/EMS building to the proposed site. The Kanabownits and Mt. Emma sites would both use solar panels for power.

All sites except Mt. Emma have existing road access for construction and maintenance. The Mt. Emma site would periodically require helicopter access for constructing and maintaining the proposed equipment, including minor vegetation trimming to maintain the landing area near the repeater site.

Existing office spaces in the Clinic building, which is connected to the new EMS building, are to be renovated to include radio equipment and the Park Dispatch Center, which would be relocated to the Clinic from Park Headquarters. Most of the radio equipment associated with Dispatch would be located in a prefabricated equipment structure (approximately 12' x 16.5' x 10.5') to the north of the Clinic/EMS buildings in a small clearing within the pinyon-juniper forest. The radio tower would be located adjacent to the equipment building to simplify electrical issues. It is possible that one or two mature pinyon or juniper trees would need to be removed to accommodate the tower and equipment building, depending upon the exact location chosen.

As with most construction proposals, this proposal has progressed only to the design stage sufficient to evaluate the impacts at the various sites within a reasonable range of design parameters, and to facilitate a decision whether to proceed. After approval of the sites and general design through this decision document, a much more detailed level of design and testing would occur to finalize the exact configuration of the radio equipment at each site (i.e., especially the number of microwave dishes needed at the four primary sites in the park). The detailed design would be evaluated to determine if it still falls within the parameters evaluated in the EA and this decision document; if it does not, then additional NEPA compliance will be necessary.

The details of the proposed radio equipment are described and compared to the current equipment at each site in Table 3 on pages 12-15 of the EA. However, as explained in the *Errata Sheet* attached to this document, the park has determined as a result of additional visibility testing performed after the EA was prepared that the height of the proposed towers could be increased if necessary to the following levels without any change in the impacts evaluated for the tower heights described in Table 3 in the EA:

- Grand Canyon Village EMS Building: 80 feet (60 feet described in EA)
- Hopi Fire Tower: 80 feet (60 feet described in EA)
- Desert View Ranger Station: 80 feet (60 feet described in EA)
- CC Hill: 180 feet (150 feet described in EA)

At the Mt. Emma site, no change from the 40 foot tower height described in the EA was evaluated during the visibility test, partially due to the nature of the test at that site and partially due to the wilderness issues at that site. At the Kanabownits site, no new tower is proposed; the antenna would simply be replaced in-kind on the existing fire tower.

As explained in the attached *Errata Sheet*, while the park will seek to minimize the height of each tower and it is expected that the tower heights described in the EA will be found upon further testing and design to be adequate, the greater tower heights listed above will be considered to be usable without additional environmental compliance if necessary to meet the project purpose and need.

The proposal anticipates very limited capability to accommodate additional non-NPS electronics on the towers and in the shelters. A shed is illustrated in the EA on page 17 and examples of the various types of towers proposed are shown on page 18 of the EA. At the Hopi Fire Tower site, non-NPS equipment would remain in place on the existing non-NPS poles; however, a new requirement would be instituted to require no-cost permits for the non-NPS equipment to ensure compatibility with other equipment at the Hopi Fire Tower site. Requests from Arizona Department of Public Safety, Coconino County

Sheriff's Office, and Navajo Nation Department of Resource Enforcement to allow for their equipment to be co-located with the NPS equipment at the Desert View site may be possible without increasing the tower height above what was initially proposed. However, it would require proper equipment spacing and consideration of other electronics issues to prevent interference with NPS equipment.

MITIGATION MEASURES

The mitigation measures listed below are considered part of the preferred alternative and will be followed during project implementation. These actions were developed to reduce the potential for adverse impacts from implementing the preferred alternative, and have proven to be effective in reducing environmental impacts on previous projects.

During implementation of the preferred alternative, best management practices and mitigation measures will be used to prevent or minimize potential adverse effects associated with construction activities. These practices and measures will be incorporated into the project construction documents and plans to ensure that major adverse impacts do not occur. Mitigation measures undertaken during construction activities will include, but are not limited to:

- Construction zones will be identified and fenced with construction tape, snow fencing, or similar material prior to any construction activity. The fencing will define the construction zone and confine activity to the minimum area required for construction. All protection measures will be clearly stated in the construction specifications and workers will be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
- Silt fencing fabric will be installed and inspected weekly or after every major storm. Accumulated sediments will be removed when the fabric is estimated to be approximately 75% full. Silt removal will be accomplished in such a way as to avoid introduction into any floodplains, wetlands or other water bodies.
- Although soil side-cast during construction will be susceptible to some erosion, such erosion will be minimized by placing silt fencing around the excavated soil. Excavated soil may be used in the project or stored in approved areas and used elsewhere in the park at NPS' discretion.
- The color and other visual aspects of the towers, associated antennae and other equipment, and sheds, will be reviewed and approved by the park's landscape architect and/or historical architect, as appropriate for individual sites, to minimize the impact to visual resources and blend in with the surrounding background and/or landscape. Additional measures beyond color may be required on a site-specific basis to camouflage the structures to minimize their visual impacts.
- Should construction unearth previously undiscovered archeological resources, work will be stopped in the area of any discovery and the GRCA cultural staff immediately notified. GRCA cultural staff will determine if further consultation with the state historic preservation officer/tribal historic preservation officer and the Advisory Council on Historic Preservation is necessary. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) will be followed.
- The NPS will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors

and subcontractors will also be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction. Equipment traffic will be minimized in the area of the sites and will also avoid known archeological resources.

- Inventories for existing populations of exotic vegetation at construction sites will occur where prescribed by GRCA vegetation program staff and any populations found will be treated prior to construction activities.
- A restoration biologist will provide input on tree avoidance at project sites where necessary. A restoration biologist will also spot-check the work progress for adherence to mitigation measures related to vegetation.
- All construction equipment that will leave the road (e.g., bulldozers and backhoes) will be pressure washed prior to entering the park to prevent introduction of exotic species into the park.
- Parking of vehicles will be limited to existing roads or disturbed areas.
- Any fill, rock, or additional topsoil needed will be obtained from a park-approved source.
- If necessary, all areas disturbed by construction will be revegetated where prescribed by GRCA vegetation program staff using site-adapted native seed and/or plants.
- Construction workers and supervisors will be instructed about special status species that are known to occur in the project area. If special status species are discovered during construction, all work in the immediate vicinity of the discovery will be halted until GRCA staff re-evaluates the project and the work is modified to allow for any protection measures determined necessary to protect the special status species.
- If a condor enters the construction site, construction will cease until it leaves on its own or until techniques are employed by permitted GRCA staff or Peregrine Fund personnel that results in the individual condor(s) leaving the area. If condors show any interest in the proposed radio sites, either during or after construction, appropriate measures will be immediately taken by appropriate GRCA or Peregrine Fund personnel in accordance with well-established procedures to mitigate the effects. The Fish and Wildlife Service and other appropriate experts will be immediately consulted to determine what additional measures would be appropriate at that time.
- Construction workers will be informed to refrain from interacting with condors and to immediately contact the appropriate GRCA or Peregrine Fund personnel when condor(s) are seen at the construction site.
- The construction site will be cleaned up at the end of each work-day (i.e., trash disposed of, scrap material picked up) to minimize the likelihood of condors and other wildlife visiting the construction site.
- To prevent soil and water contamination as well as potential poisoning of California condors or other wildlife, a vehicle fuel leakage and spill plan will be developed and implemented. The plan will include immediate clean up of any hazardous substance and notification of NPS. The plan will define how each hazardous substance will be treated in case of leakage or spill.
- The flow of vehicle traffic on park roads will be maintained as much as possible during the construction period. Construction delays will normally be limited to 30 minutes. There may be some

periods when the nature of the construction work may require temporary road closures. All efforts will be made to reduce these as much as possible and to alert park staff as soon as possible if delays longer than normal are expected. Visitors will be informed of construction activities and associated delays.

- Contractors will coordinate with park staff to minimize disruption to normal park activities. Equipment will not be stored along the roadway overnight without prior approval of park staff. Construction workers and supervisors will be informed about the special sensitivity of park values, regulations, and appropriate housekeeping.
- The NPS will re-evaluate the locations in or adjacent to recommended wilderness (i.e., Mt. Emma, CC Hill, and Kanabownitz) in 5 years to see if there is new technology that would eliminate the need for these sites.
- Construction, operation and periodic maintenance of the equipment at the Mt. Emma site, including helicopter access and trimming of vegetation to maintain a safe landing site, will be conducted in accordance with the Minimum Requirement Analysis included as an appendix to the May 2007 EA, and will be entirely within the park boundary to avoid impacts to adjacent BLM land. The new shelter, tower and antennae will be located adjacent to the existing equipment within the park boundary and in an area which will best help to screen the new equipment from view. The equipment will be painted or otherwise camouflaged to blend in with the surroundings as much as feasible.

ALTERNATIVES CONSIDERED

The EA evaluated a No Action alternative (Alternative A) and one action alternative (Alternative B) for addressing the purpose and need for action. The preferred alternative was identified as Alternative B and is as described previously in this document in detail.

Alternative A – No Action Alternative

Grand Canyon National Park currently has six repeater sites located on the North and South Rims (as shown in Figure 1 on page 10 of the EA) within the park and two sites outside the park boundary (VT Ridge and O'Leary Peak). The site at Yavapai Observation Station, however, is currently out-of-service. Table 3 (pages 12-15) in the EA provides site-specific information on the current system used in the park. These repeaters provide wideband VHF communication for the four major operational networks (Law Enforcement, Fire, Medical, and Administrative). The current system provides radio coverage for the majority of the most-visited areas in the park; however, large portions of remote, backcountry and inner-canyon areas do not have radio coverage.

An additional tactical radio network provides incident-response communications for the system. One of the current sites (Hopi Point) supports all four operational networks and the tactical network. All other sites provide a single repeater to expand coverage for one of the four operational networks. The Dispatch/Central Communications Site is at Park Headquarters while several control stations (mobile subscribers) are located throughout the park at access gates and ranger stations. No data connectivity currently exists between any of the sites and the Dispatch Facility. One of the sites (Mt. Emma) is within recommended park wilderness and another (Kanabownitz Fire Tower) is adjacent to recommended wilderness. The Mt. Emma site is also adjacent to the park's boundary with lands managed by the Bureau of Land Management as part of Grand Canyon – Parashant National Monument, lands which are

also part of the designated Mt. Logan Wilderness. Two sites (Desert View Watchtower and Yavapai Observation Station) are National Historic Landmarks and two sites (Kanabownitz Fire Tower and Hopi Fire Tower) are likely to be eligible for listing on the National Register of Historic Places.

The current system does not meet the mandate to convert to narrowband technology and uses the full spectrum of wideband analog frequencies available to the NPS from the NTIA. Additional frequency is not available for homeland security or other federal agencies. Additionally, many other agencies have converted to digital technology. The current technology employed by the NPS (wideband analog) is not compatible with the agencies that have converted to digital technology, so as more agencies convert to narrowband digital technology the park will lose interagency communication. Thus, the current radio system is becoming obsolete and is in increasing need of repair or replacement (e.g., several of the towers are showing signs of rust).

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 which guides the Council on Environmental Quality (CEQ). The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA Section 101":

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. 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;
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative B is the environmentally preferred alternative. Alternative B strives to and meets policies 1 through 6 more fully than Alternative A by improving health and safety issues by implementing a better radio system. Alternative B best meets the purpose and need for action and best addresses overall park service objectives while minimizing impacts to park resources.

Alternative A, the No Action alternative, would provide for continued use by GRCA staff of the current wideband analog radio system. This alternative strives to and meets policies 1, 4, 5, and 6 to varying degrees. However, this alternative does not fully meet policies 2 or 3, and does not meet the purpose and need for action.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse. As fully discussed in the EA, the preferred alternative will not measurably affect minority or low-income populations, archeological resources, ethnographic resources, museum collections, air quality, water quality, floodplains and wetlands, prime and unique farmland, socioeconomic values, visitor use and experience, soundscape, or lightscape.

Implementation of the preferred alternative will result in localized, minor, long-term adverse impacts to historic properties from the visibility of the radio repeater equipment from historic structures such as Desert View Watchtower and Hopi Fire Tower. Beneficial impacts will also occur from removing radio equipment from eligible or potentially eligible properties (Desert View Watchtower, Yavapai Observation Station, and Park Headquarters Building), resulting in localized, negligible to minor, long-term beneficial impacts.

Implementation of the preferred alternative will result in localized, negligible to minor, long-term adverse impacts to cultural landscapes due to the fact that radio repeater equipment at Hopi Fire Tower, Desert View Ranger Station, CC Hill, and Grand Canyon Village EMS Building may be intermittently visible from cultural landscapes associated with Grand Canyon Village National Historic Landmark District, Desert View Watchtower Historic District, West Rim Drive Cultural Landscape, and North Rim Bright Angel Peninsula Developed Area Cultural Landscape. The cultural landscape most affected would be the West Rim Drive Cultural Landscape, as both the current and proposed radio equipment is quite visible from the Powell Memorial area. As explained in the *Errata Sheet* attached to this document, the visibility of the equipment at the Hopi Fire Tower site from the Powell Memorial was not adequately described in the EA, and both alternatives (A and B) would have localized, minor, long-term adverse impacts to the West Rim Drive Cultural Landscape, but would not affect the character-defining patterns or features of the cultural landscape. Beneficial impacts will also occur from preferred Alternative B from removing radio equipment from Desert View Watchtower, Yavapai Observation Station, and Park Headquarters Building, resulting in localized, negligible to minor, long-term beneficial impacts to historic districts and cultural landscapes.

Implementation of the preferred alternative will result in site-specific, minor, short-term adverse impacts to soils as a result of soil removal/profile mixing (approx. 87.2 ft^3) and potential soil pollution from equipment leakage/failure during construction, due to digging required to anchor the towers into the ground at CC Hill, Hopi Fire Tower, Desert View Ranger Station, and Grand Canyon Village EMS sites. Trenching will also be needed at the CC Hill and Grand Canyon Village EMS sites.

Implementation of the preferred alternative will result in site-specific, negligible to minor, short-term adverse impacts to vegetation and wildlife because of the limited amount of disturbance expected from construction (one acre spread over six sites) and the fact that many of the sites are in already disturbed areas with limited vegetation and wildlife use. Any potential impact from noxious weeds/exotic species would be mitigated to a negligible level.

Implementation of the preferred alternative will result in site-specific, negligible, short-term adverse impacts to special status species (i.e., Mexican spotted owl, California condor, and peregrine falcon) due to the fact that none of the proposed radio tower/shed locations occur in habitat considered suitable for nesting for condors or peregrines, and special status species are not likely to be permanently displaced as a result of this project due to the small amount of disturbance and the availability of similar habitat in the surrounding area. If any of these species shows any interest in any of the sites, immediate action will be taken as specified under Mitigation Measures above.

Implementation of the preferred alternative will result in localized, minor to moderate, long-term adverse impacts to visual quality at the following sites (Desert View, Hopi Fire Tower, and CC Hill) generally from the radio tower extending above the treeline and being intermittently visible from sensitive viewpoints. At Grand Canyon Village EMS, adverse impacts would be localized, minor, and long-term. At Mt. Emma, adverse impacts would be localized, negligible to minor, and long-term. At Kanabownitz, adverse impacts would be localized, negligible, and long-term. Beneficial impacts to visual quality would be localized, minor and long-term at Desert View Watchtower, Yavapai Observation Station, and Park Headquarters because existing equipment would be removed.

Implementation of the preferred alternative will result in regional, moderate, long-term beneficial impacts to park operations because it would provide increased radio coverage throughout the park, use an advanced digital solution that complies with the APCO Project 25 CAI, and would be compatible with any other agencies that have converted to digital technology and would allow for interconnectivity with these agencies.

Implementation of the preferred alternative will result in short-term, localized, moderate adverse impacts to wilderness resources primarily from helicopter access to Mt. Emma during construction, from increased traffic on the access roads to CC Hill and Kanabownits during construction, and construction noise and increased human activity at all three sites during construction, which has the potential to impact backcountry visitors and wilderness character in recommended wilderness. Long-term direct and indirect impacts to wilderness character would be adverse and range from negligible at Kanabownitz to minor at Mt. Emma and CC Hill as a result of constructing radio repeater equipment in an area adjacent to or within recommended wilderness areas.

Degree of effect on public health or safety. The proposed radio equipment does not directly or indirectly affect the way visitors use or experience the park. Moderate, beneficial, long-term impacts to public health and safety are expected due to improved/increased radio coverage throughout the park.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. The preferred alternative will not measurably impact floodplains and wetlands, minority or low-income populations, or prime and unique farmland. No wild and scenic rivers are designated near the project area and none will be affected by implementation of the preferred alternative. No ecologically critical areas occur within the project area and disturbance is primarily limited to that adjacent to or within previously disturbed areas.

A Minimum Requirements Analysis (MRA) was included with the EA to address potential impacts on wilderness. One of the existing and proposed secondary sites (Mt. Emma) is within recommended park wilderness, and one other proposed optional secondary site (Kanabownitz) and one proposed primary site (CC Hill) are adjacent to recommended wilderness. The MRA determined that the preferred alternative was necessary to manage the area as wilderness and is the minimum tool. A mitigation measure was added to this decision document to ensure that all construction, operation and periodic maintenance activities related to implementing the preferred alternative are conducted in accordance with the MRA and EA. A second mitigation was also added to require re-evaluation of the locations in or adjacent to recommended wilderness in 5 years to see if there is new technology that would eliminate the need for these sites.

Alternative sites to Mt. Emma that are outside recommended wilderness boundaries were considered (e.g., Tuweep Ranger Station and Mt. Trumbull), but the elevation of Mt. Emma, the existing equipment at the site, and the proximity to the canyon make this site a crucial component to the existing and proposed radio system. The existing equipment is considered temporary. If necessary, the equipment could be removed and the site (over time) returned to a natural state.

The Mt. Emma site is also immediately adjacent to the park boundary and the designated Mt. Logan Wilderness Area on the other side of the boundary, on BLM land within Grand Canyon-Parashant National Monument. The BLM maintains a radio repeater on Mt. Logan within the Mt. Logan Wilderness Area.

Impacts to wilderness from construction activities would be short-term, localized, moderate adverse impacts, primarily from helicopter access to Mt. Emma and increased traffic on the access roads to CC Hill and Kanabownits during construction, construction noise and increased human activity to the site during construction, which has the potential to impact backcountry visitors in the nearby wilderness. Long-term direct and indirect impacts would be adverse and range from negligible at Kanabownitz to minor at Mt. Emma and CC Hill as a result of constructing radio repeater equipment in an area adjacent to or within recommended wilderness areas.

One site (Kanabownitz Fire Tower) proposed for the in-kind replacement of radio equipment is likely to be eligible for the National Register of Historic Places.

The proposed action would remove existing radio equipment from two historic buildings (Desert View Watchtower and Yavapai Observation Station) that are part of the park's current radio system network. Additionally, the proposed action would remove some equipment from the Park Headquarters Building.

The proposed tower at CC Hill would lie just north of the North Rim Bright Angel Peninsula Cultural Landscape. The existing and proposed site at Desert View Ranger Station could affect the Desert View Cultural Landscape. Additionally, the existing and proposed radio equipment at Hopi Fire Tower can and will be seen from the West Rim Drive Cultural Landscape, and can be seen but only with magnification from the Grand Canyon Village National Historic Landmark District.

The mitigation measures listed above will be implemented to minimize the potential for adverse impacts to natural and cultural resources and unique characteristics.

Degree to which effects on the quality of the human environment are likely to be highly controversial. There were no highly controversial effects identified during either preparation of the EA or the public review period.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks. There were no highly uncertain, unique or unknown risks identified in the EA or during the public review period.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The preferred alternative neither establishes a precedent for future actions with significant effect nor represents a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Implementation of the preferred alternative will not result in any significant cumulative impacts.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. Implementation of the preferred alternative will result in localized, minor, long-term adverse impacts to historic properties from the visibility of the radio repeater equipment from historic structures such as Desert View Watchtower and Hopi Fire Tower. Beneficial impacts will also occur from removing radio equipment from eligible or potentially eligible properties (Desert View Watchtower, Yavapai Observation Station, and Park Headquarters Building), resulting in localized, negligible to minor, long-term beneficial impacts.

Implementation of the preferred alternative will result in localized, negligible to minor, long-term adverse impacts to cultural landscapes due to the fact that radio repeater equipment at Hopi Fire Tower, Desert View Ranger Station, CC Hill, and Grand Canyon Village EMS Building may be intermittently visible from cultural landscapes associated with Grand Canyon Village National Historic Landmark District, Desert View Watchtower Historic District, West Rim Drive Cultural Landscape, and North Rim Bright Angel Peninsula Developed Area Cultural Landscape. The cultural landscape most affected would be the West Rim Drive Cultural Landscape, as the both the current and proposed radio equipment is quite visible from the Powell Memorial area. As explained in the *Errata Sheet* attached to this document, the visibility of the equipment at the Hopi Fire Tower site were not adequately described in the EA, and both alternatives (A and B) would have localized, minor, long-term adverse impacts to the West Rim Drive Cultural Landscape, but would not affect the character-defining patterns or features of the cultural landscape. Beneficial impacts will also occur from preferred Alternative B from removing radio equipment from Desert View Watchtower, Yavapai Observation Station, and Park Headquarters Building, resulting in localized, negligible to minor, long-term beneficial impacts to historic districts and cultural landscapes.

All components of the preferred alternative take into consideration the potential for impacts to these sensitive cultural resources and project proposals have been designed with protection of these resources

in mind, so that adverse effects are minimized. Mitigation measures to protect cultural resources are included in the mitigation measures section of this document.

Consultation between the NPS and the State Historic Preservation Officer (SHPO) was extensive. The EA was originally prepared as a combination EA and Assessment of Effect (AEF). However, due to concerns expressed by park Interdisciplinary Team members for this project, the EA/AEF was revised to an EA, and a Memorandum of Agreement (MOA) was sent to SHPO along with the EA during the public review period for the EA. The SHPO commented in a letter concerning the EA dated July 20, 2007, that an MOA in its present form was premature. Based upon that, the park conducted additional visibility tests of the proposed towers and antennae (as further described in the attached *Errata Sheet)*, and converted the MOA into a draft Programmatic Agreement (PA) that was sent to SHPO for review on October 24, 2007. Based upon subsequent conversations with SHPO staff along with the EA and the draft PA, the park determined in a letter dated November 26, 2007, that the project would have no adverse effect on historic properties in Grand Canyon National Park, in compliance with Section 106 of the National Historic Preservation Act. Section 106 compliance was completed when the SHPO on December 4, 2007, concurred with the park's determination.

Consultation between the NPS and tribal groups occurred as part of scoping and as part of the review of the EA to guide Section 106 consultation and the cultural resource aspects of the project. The only specific request from any tribe associated with this project was a request during scoping from the Navajo Nation Department of Resource Enforcement to be considered as a potential future user in conjunction with NPS equipment at the proposed site at Desert View. The preferred alternative includes a statement that the park believes that it may be possible to incorporate equipment from the Navajo Nation as well as two other agencies who made similar requests onto the proposed tower and shed at Desert View without increasing the tower height above what was initially proposed. However, it would require proper equipment spacing and consideration of other electronics issues to prevent interference with NPS equipment. This project was discussed at several meetings between tribal representatives and park staff to discuss park projects, and copies of the EA were sent to all tribes associated with the park. No comments were received from any tribe during review of the EA, and no specific comments were received at any of the meetings with tribal representatives. Tribal review of the EA is complete.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat. For purposes of Section 7 consultation under the Endangered Species Act, implementation of the Preferred Alternative with previously established and proven mitigation measures will have no effect on the California condor, peregrine falcon, and Mexican spotted owl. Peregrine falcons are no longer federally listed, but are considered sensitive by the park. Concurrence on the determination for Mexican spotted owls was received from the U.S. Fish and Wildlife Service in a memorandum dated August 2, 2007. In that memorandum, the Fish and Wildlife Service recommended considering additional mitigation measures for California condors. After considering the information and concerns expressed, the park responded in a letter dated October 15, 2007, by renewing its commitment to take immediate action to ensure the accuracy of its "no effect" determination if any condors show any interest in any of the sites, including additional consultation. A mitigation measure was added to this document to make that commitment more explicit. Section 7 consultation is complete.

Whether the action threatens a violation of Federal, state or local environmental protection law. The preferred alternative violates no federal, state, or local environmental protection laws.

IMPAIRMENT OF PARK RESOURCES OR VALUES

In addition to determining the environmental consequences of the preferred and other alternatives, National Park Service policy (*Management Policies*, 2006) requires analysis of potential effects to determine whether or not actions will 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, adverse impacts on 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 the park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, will harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values. Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. An impact to any park resource or value may constitute impairment. An impact will be more likely to constitute impairment to the extent that it affects 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.

Because there will 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 Grand Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there will be no impairment of Grand Canyon National Park's resources or values as a result of implementation of the preferred alternative.

PUBLIC INVOLVEMENT

The EA was made available for public review and comment during a 30-day period ending 9 July 2007, through a combination of direct mailing, issuance of a press release and posting on the Planning, Environment and Public Comment website (http://parkplanning.nps.gov/grca). All those that previously provided comments during the public scoping period received either a printed copy or an email notification that the EA was available for public review.

Two comment website submissions were received and are summarized as follows: 1) an unaffiliated individual requested that NPS ensure adequate radio coverage on the North Rim, including holes currently noted on Highway 67 between developed areas and the Entrance Station, on roads to Point Imperial and Cape Royal, and remote locations such as Point Sublime; 2) an unaffiliated individual commented on concerns regarding entrance fees, which are outside the scope of this analysis. No other comment letters or emails were received.

As described in more detail above, consultation between the NPS and the State Historic Preservation Officer (SHPO) was completed with SHPO concurrence dated December 4, 2007, in the park's determination that the project would have no adverse effect on historic properties in the park.

Consultation between the NPS and tribal groups occurred as part of public scoping, as part of review of the EA and during meetings of park and tribal representatives to discuss park projects. All affiliated tribes with an interest in this project were contacted concerning this project. The only specific request from any tribe associated with this project was a request during scoping from the Navajo Nation Department of Resource Enforcement to be considered as a potential future user in conjunction with NPS equipment at the proposed site at Desert View. The preferred alternative includes a statement that the park believes that it may be possible to incorporate equipment from the Navajo Nation as well as two other agencies who made similar requests onto the proposed tower and shed at Desert View without increasing the tower height above what was initially proposed. However, it would require proper equipment spacing and consideration of other electronics issues to prevent interference with NPS equipment. No comments were received from any tribe during review of the EA, and no specific comments were received at any of the meetings with tribal representatives. Tribal review of the EA is complete.

Consultation between the NPS and the United States Fish and Wildlife Service on this project is complete. USFWS provided concurrence on the determination of effects for the Mexican spotted owl in a memorandum dated August 2, 2007. In that memorandum, the Fish and Wildlife Service recommended considering additional mitigation measures for California condors. After considering the information and concerns expressed, the park responded in a letter dated October 15, 2007, by renewing its commitment to take immediate action to ensure the accuracy of its "no effect" determination if any condors show any interest in any of the sites, including additional consultation. A mitigation measure was added to this document to make that commitment more explicit. Section 7 consultation is complete.

CONCLUSION

The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). Adverse environmental impacts that could occur are negligible to moderate in effect, with most effects negligible to minor. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, known ethnographic resources, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that the project does not constitute a major federal action significantly affecting the quality of the human environment and an EIS will not be required for this project and thus will not be prepared.

Recommended: _____ 12/14/07
Steven P. Martin — Date
Superintendent, Grand Canyon National Park

Approved: _____ 2/7/08
Michael D. Snyder — Date
Director, Intermountain Region

ERRATA SHEET

Narrowband/Digital Radio System Conversion

Grand Canyon National Park

The NPS received two public comment website submissions in response to a request for comments on the May 2007 Environmental Assessment (EA) for Narrowband/Digital Radio System Conversion. No letters or emails were received during the 30-day public comment period which ended July 9, 2007. Interested parties were notified of the availability of the EA and the public comment period by a press release, and emails or letters sent to several large park mailing lists, including agencies, organizations, park stakeholders, and media. Letters and copies of the EA were sent to affiliated tribes, persons who responded to the park during scoping, and Congressional representatives. Neither of the comment submissions on the EA received by the park contained substantive comments. Substantive comments were considered to be comments which:

- question, with reasonable basis, the accuracy of information in the EA.
- question, with reasonable basis, the adequacy of environmental analysis.
- present reasonable alternatives other than those presented in the EA.
- cause changes or revisions in the proposal.

After the public comment period closed, the NPS received a letter concerning the EA from the Fish and Wildlife Service as part of consultation under Section 7 of the Endangered Species Act, a letter from the Arizona State Historic Preservation Office as part of consultation under Section 106 of the NHPA, and verbal and email correspondence with the Superintendent of Grand Canyon – Parashant National Monument concerning the potential effects of the Mt. Emma site on adjacent BLM lands.

As a result of discussions among park staff in response to the agency correspondence, an additional visibility test of the proposed radio towers was conducted in September 2007 using a kite and large balloon to provide additional information about the visibility of the proposed equipment at the sites to further determine the accuracy of the impact analysis in the EA and whether any revision of the analysis was warranted. A report of that test was prepared and is posted on the NPS' Planning, Environment and Public Comment website (http://parkplanning.nps.gov/grca) for this project. Major results from the visibility test include:

- The Superintendent of Grand Canyon-Parashant National Monument participated in the test at Mt. Emma, confirmed that the radio equipment location was within Grand Canyon National Park, and confirmed through observers on BLM land that the proposed equipment would be barely visible and only with magnification from key visitor locations within Grand Canyon-Parashant National Monument.
- The proposed equipment at Mt. Emma would be at most barely visible with magnification from key visitor locations within the park.
- The proposed equipment at CC Hill on the North Rim would not be visible from any visitor locations on the North Rim at 180 feet, which is 30 feet higher than proposed for the site in the EA.

- The proposed equipment (as well as the existing equipment) at Hopi Fire Tower will be more visible from the Powell Memorial, which is within the West Rim Drive Cultural Landscape, than described in the EA, at tower heights of 40, 60 and 80 feet. The Hopi Fire Tower equipment would be barely visible only with magnification from the rim hotel area of the Grand Canyon Village National Historic Landmark District.
- The proposed equipment at Desert View will be barely visible without magnification from the Desert View Watchtower National Historic Landmark at heights up to 80 feet, confirming the impact level described in the EA even for a tower 20 feet higher than evaluated in the EA.
- The proposed equipment at Grand Canyon Village EMS would not be visible from within the Grand Canyon Village National Historic Landmark District at heights up to 80 feet (i.e., 20 feet higher than evaluated in the EA), but would be visible from opposite the Clinic/EMS building on Center Road, and barely visible from the Trailview Overlook within the West Rim Drive Cultural Landscape, consistent with the impacts described in the EA.

As a result, the following changes from the EA are made in the decision document for this project:

1. The decision document incorporates a height of 180 feet for the proposed CC Hill tower, 80 feet for the proposed tower at the Hopi Fire Tower, 80 feet for the Desert View site, and 80 feet for the Grand Canyon Village EMS site, amending the EA, in case a tower up to that height is found to be necessary to meet the project purpose and need. The impacts of these taller tower heights were found to be consistent with the impact levels described in the EA. The park will seek to minimize the height of each tower, and it is expected that the tower heights described in the EA will be found upon further testing and design to be adequate. However, if they are found to be needed, the greater tower heights listed above will be considered to be usable without additional environmental compliance if necessary to meet the project purpose and need.
2. The decision document incorporates additional mitigation measures to protect wilderness resources at the Mt. Emma site and to reevaluate the need for the Mt. Emma, CC Hill and Kanabownits sites after 5 years.
3. The visibility of the equipment at the Hopi Fire Tower site was found to be more visible from the Powell Memorial within the West Rim Drive Cultural Landscape than described in the EA. Both alternatives (A and B) would have localized, minor, long-term adverse impacts to the West Rim Drive Cultural Landscape, but would not affect the character-defining patterns or features of the cultural landscape.