



# United States Department of the Interior



## NATIONAL PARK SERVICE

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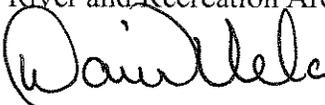
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### Memorandum

To: Superintendent, Big South Fork National River and Recreation Area

From: Regional Director, Southeast Region 

Subject: Record of Decision (ROD) for the Non-Federal Oil and Gas Management Plan and Final Environmental Impact Statement for Big South Fork National River and Recreation Area and Obed Wild and Scenic River

Attached please find the signed ROD for the subject project.

If you require further assistance or information, please contact Ben West, Planning and Compliance Division, at 404-507-5700.

Attachment



## **RECORD OF DECISION**

### **Non-Federal Oil and Gas Management Plan and Final Environmental Impact Statement**

#### **Big South Fork National River and Recreation Area Obed Wild and Scenic River**

### **INTRODUCTION**

The Department of the Interior, National Park Service (NPS), has prepared this Record of Decision (ROD) for the Big South Fork National River and Recreation Area (NRRA) and Obed Wild and Scenic River (WSR) Non-Federal Oil and Gas Management Plan and Final Environmental Impact Statement (final plan/EIS). This ROD states what the decision is, identifies the other alternatives considered and the environmentally preferable alternative, discusses the basis for the decision, lists measures to minimize environmental harm, and briefly describes public and agency involvement in the decision-making process. The impairment determination for the selected action is attached to this ROD.

### **PURPOSE AND NEED FOR THE PLAN/EIS**

Over 300 oil and gas wells exist within the Big South Fork NRRA, and another seven wells exist within the Obed WSR, which is located approximately 20 to 30 miles south and west of the Big South Fork NRRA. Because of the proximity of the two units, and their similar attributes and issues relating to oil and gas operations (such as similar geography and other natural resource conditions), the NPS decided to develop an Oil and Gas Management Plan / Environmental Impact Statement (plan/EIS) for both units together to aid in the effective regulation and management of non-federal oil and gas operations.

Many of the past and existing oil and gas operations in these NPS units are adversely impacting resources and values, human health and safety, and visitor use and experience; most are not in compliance with federal and state regulations, most notably, the NPS 36 Code of Federal Regulations (CFR), Part 9 Subpart B. In addition, future oil and gas operations have the potential to damage park resources and values. The plan/EIS is needed to provide an efficient and effective strategy for park managers to ensure the units are protected for the enjoyment of future generations. There is also a need for park-specific guidance for the planning efforts of oil and gas owners and operators.

The purpose of the plan/EIS for Big South Fork NRRA and Obed WSR is to analyze alternative approaches, clearly define a strategy, and provide guidance for the next 15 to 20 years to ensure that activities undertaken by owners and operators of private oil and gas rights, as well as activities undertaken by the NPS, are conducted in a manner that protects the resources, visitor use and experience, and human health and safety in the park units.

The following are the objectives of the oil and gas management plan:

### **General**

- Identify and protect resources from adverse impacts from oil and gas operations.
- Provide owners and operators of private oil and gas rights reasonable access for exploration, production, maintenance, and surface reclamation.

### **Water Resources**

- Protect and enhance water resources.

### **Vegetation and Wildlife, Including Listed Species of Management Concern (Threatened, Endangered, and Special Status Species)**

- Protect species of management concern from adverse impacts from oil and gas operations.
- Protect critical habitat from adverse impacts from oil and gas operations.

### **Visitor Experience, Conflicts, and Safety**

- Prevent, minimize, or mitigate conflicts between oil and gas operations and visitor use.
- Protect human health and safety from adverse impacts from oil and gas operations.

### **Cultural Resources**

- Protect cultural resources, including those on, or eligible for listing on, the National Register of Historic Places, from adverse impacts from oil and gas operations.

### **Park Management and Operations**

- Provide pertinent guidance to operators to facilitate planning and compliance with NPS regulations.
- Establish an efficient process under the National Environmental Policy Act of 1969 (NEPA) for plugging wells and reclaiming well sites and access roads.

## **BACKGROUND**

As of October 2006, approximately 712 non-federal oil and gas wells occurred within 13 national parks in 9 states, with more than 300 in Big South Fork NRRRA alone. In general, the NPS may permit mineral development in units of the national park system only where: (1) a private mineral right exists (e.g., rights owned by a private individual, corporation, or state) and development of such rights is not specifically prohibited by Congress; (2) actions would not impair park resources, values, or purposes; and (3) the conduct of such activity is performed in accordance with all applicable federal, state and local laws and regulations, and NPS policies.

The NPS has the authority to regulate these rights to fulfill Congress's mandate to leave park resources and values unimpaired for the enjoyment of future generations (16 USC 1). To protect park resources, the NPS promulgated regulations for non-federal oil and gas operations on December 8, 1978. The regulations, commonly known as the "9B regulations," are found at 36 CFR 9B and are presented in appendix A of the final plan/EIS.

## **Non-Federal Oil and Gas Development/Management at Big South Fork National River and Recreation Area**

Oil and gas fields are located adjacent to and extend into the boundary of Big South Fork NRRRA, primarily in the southern portions of the park unit. The enabling legislation for the Big South Fork NRRRA prohibits oil and gas extraction and development within the designated gorge area, but allows for development in the adjacent areas outside the gorge (figure 4 of the final plan/EIS details the gorge boundary).

Currently, there are more than 300 oil and gas wells within the Big South Fork NRRRA. This includes wells classified as active, inactive, plugged, orphaned or unknown (see page 14 of the final plan/EIS for a definition of these classifications). No new wells have been drilled in the Big South Fork NRRRA since about 1990. Active oil and gas production at Big South Fork NRRRA occurs primarily in the south end of the unit, on both deferred properties (fee simple private property within the legislative boundary), as well as on property owned by the United States government. Wells with an “inactive” status are candidates to become either actively producing wells or plugged and abandoned wells.

## **Non-Federal Oil and Gas Development/Management at Obed Wild and Scenic River**

Although oil and gas exploration in the Obed WSR watershed has declined, there are approximately 71 oil and gas wells located within one mile of the Obed WSR, 44 of which are located less than a half-mile from the unit. There are seven oil and gas wells in Obed WSR, including two plugged and abandoned wells.

Existing or new operations inside the Obed WSR can only occur if the rights existed prior to the government’s acquisition of the surface estate. However, oil and gas exploration is limited to directional drilling from outside the boundary by deed restrictions and the requirements in the 9B regulations (36 CFR 9.41) that call for a 500-foot setback from perennial, intermittent, or ephemeral watercourses.

## **DECISION (SELECTED ACTION)**

The NPS will implement alternative C, the selected action, which was described as the NPS preferred alternative in both the draft and the final plan/EIS. The final plan/EIS was released to the public for the required 30-day no-action period beginning July 20, 2012 and ending August 18, 2012. Under alternative C, the NPS will proactively pursue enforcement of the 9B regulations and plans of operations and provide clear communication with the public and operators about Current Legal and Policy Requirements (CLPRs), including the 9B regulations. For current operations, the NPS will continue to work cooperatively with the state on regulations or enforcement, but will conduct increased inspections and monitoring and identify sites that are found to be impacting, or threatening to impact, park resources beyond the operations area to bring these into compliance. New operations will be reviewed and permitted in accordance with CLPRs and, in addition, “Special Management Areas” or SMAs will be designated to identify and protect those areas where park resources and values are particularly susceptible to adverse impacts from oil and gas development. These operating stipulations will be applied in the designated SMAs to protect the resources and values of the park units unless other mitigation measures were specifically authorized in an approved plan of operations. The park will use the oil and gas management planning process to proactively share information with the public about regulatory requirements, to seek out operators to ensure information is communicated clearly and effectively, and to focus staff resources on the implementation and compliance with the regulatory framework. Alternative C also includes a new management framework for efficiently completing compliance processes necessary for plugging and reclamation of wells, which will provide a method for evaluating the environmental

compliance needs for future site-specific projects. The designated SMAs will be considered in setting priorities for plugging and reclamation.

Details on the costs of the selected action are summarized in the final plan/EIS in table 7, and the various elements of the selected alternative are summarized below.

### **Special Management Areas**

Under alternative C, SMAs will be designated to identify and protect those areas where resources and values are particularly susceptible to adverse impacts from oil and gas operations, or areas where certain resources are important to maintaining the ecological integrity of the park units. Under the selected alternative, surface use and timing stipulations were developed for the SMAs for different types of non-federal oil and gas operations. These stipulations will be followed unless mitigation that specifically addresses the resource or value identified in the SMA and that will protect and enhance the resource or value is authorized in an approved plan of operations. Although specific setback distances are described, these do not represent a strict prescription. The actual distances for setbacks may vary depending upon the specifics of individual projects and resources found at the sites and may be modified to be either increased or decreased from the figures presented in the plan/EIS. All setbacks described are measured from the outermost boundary of any operations, as defined in 36 CFR 9.31(c). The SMAs identified under alternative C and reasons for the designation are described in table 4 of the final plan/EIS and are depicted in figures 8, 9 and 10. The restrictions associated with these are summarized below:

- **Sensitive Geomorphic Feature SMA**—This includes features such as arches, chimneys, natural bridges, falls, and windows. With the exception of plugging and reclamation activities, there will be No Surface Use in this SMA (unless mitigations are approved in a plan of operations). A 500-foot setback will be required for geophysical exploration, drilling and production operations based on the sensitivity of the resource and the potential impacts from vibrations associated with proposed operations.
- **Cliff Edge SMA**—This includes areas mapped by the NPS during development of the GMP for Big South Fork NRRRA. As with sensitive geomorphic features, there will be No Surface Use in this SMA with the exception of plugging and reclamation activities (unless mitigations are approved in a plan of operations). Generally, a 100-foot setback will be required for all oil and gas operations (exploration, drilling, or production) unless an operator can demonstrate that these activities will not negatively impact the associated natural resources (federally threatened, endangered, candidate and/or state-listed species); archeological resources; sites eligible for listing on the NRHP; and/or visitor experience at the location. Timing restrictions may be applied to drilling operations to minimize impacts to species of special concern, and to avoid impacts to soils from rutting.
- **Managed Fields SMA**—This includes managed fields identified in the Fields Management Plan/EA (NPS 2006) that occur in the vicinity of private mineral interests. With the exception of geophysical exploration and plugging and reclamation activities, there will be No Surface Use in this SMA (unless mitigations are approved in a plan of operations). Generally, there will be no setback for geophysical exploration. There will be a 100-foot setback for drilling and production.
- **SMAs for Visitor Use Areas, Administrative Areas, and Trails**—This includes areas identified in the park unit GMP as First Order Development and Visitor Use Zone (readily accessible concentrations of visitor or administrative facilities, such as the Bandy Creek, Blue Heron, and Headquarters areas), and all designated trails identified in the GMP. Although these SMAs were established for differing reasons, the stipulation assigned will be the same. With the exception of plugging and reclamation activities, No Surface Use will be allowed in these areas, and setbacks

will be required from the outer boundary of the SMA for geophysical exploration (500 feet) as well as drilling and production (1,500 feet) for visitor use and administrative areas and 300 feet for trails (unless mitigations are approved in a plan of operations). Even if operations are allowed in these areas through plans of operation, all operations will be limited during high visitor use or visitation periods (generally April through October) to minimize impacts to visitors, and drilling will only be allowed during dry periods to minimize impacts to soils from rutting.

- **Cultural Landscape and Cemeteries SMA**—This includes 56 known cemeteries and 19 cultural landscapes, including four that are eligible for listing on the NRHP. With the exception of plugging and reclamation activities, No Surface Use will be allowed in these areas, and setbacks will be required from the outer boundary of the SMA (unless mitigations are approved in a plan of operations). A 100-foot setback from cemeteries and a 1,500-foot setback from cultural landscapes will be required for all operations. All operations will be limited during high visitor use or visitation periods (generally April through October) to minimize impacts to visitors. Drilling will only be allowed during dry periods to minimize impacts to soils from rutting.
- **State Natural Area SMA**—This includes the Honey Creek and Twin Arches state natural areas. No Surface Use will be allowed in these areas, with the exception of plugging and reclamation activities (unless mitigations are approved in a plan of operations). This will apply to exploration, drilling, and production operations.
- **Special Scenery SMA**—This includes areas within the park unit that are identified by conducting viewshed analysis as part of plans of operations. Specific examples of special scenery that could be included in this SMA include Twin Arches, Honey Creek Overlook, Angel Falls Overlook, Maude's Crack, Sawtooth, and Yahoo Falls.

The analysis will involve visiting and documenting a site proposed for oil and gas development with photographs, as well as recording the location using global positioning system (GPS) equipment. The location information will be entered into a geographic information system (GIS) database and evaluated electronically using a tool that will allow park managers to determine if the site lies within a viewshed that is visually sensitive to changes in the landscape. If so, the proposed location will become part of the Special Scenery SMA.

Geophysical exploration will be allowed in this SMA at any time, while drilling activities in these areas will be limited during high visitor use periods (generally April through October). Production operations will be allowed in this SMA if the viewshed analysis indicates it will not impact the special scenery of an area.

- **Obed WSR SMA**—This includes all federally owned land within the boundaries of the park unit. No Surface Use, with the exception of plugging and reclamation activities, will be allowed on any of the federal property within the boundaries of the Obed WSR.

## **Current Operations**

Under the selected action, the NPS will proactively contact current operators and pursue 9B enforcement and plans of operations. Priorities for enforcement will be set considering environmental/health and safety issues at well sites; the presence of abandoned wells; the extent of an operator's property interest in the park units; the location of a well relative to producing areas; road conditions; proximity to an SMA; and status of compliance with state regulations. The NPS will continue to work cooperatively with the state on regulations or enforcement, but increased inspections and monitoring will proactively identify sites that are found to be impacting, or threatening to impact, park resources beyond the operations area. The 9B regulations will be enforced at any such sites, and operations found to pose a significant threat to federally owned or controlled lands or waters shall be suspended by the superintendent until the threat is removed or remedied (see 36 CFR 9.33 and 9.51).

It is assumed that 125 wells at Big South Fork NRRRA and two wells at Obed WSR could be serviced under this alternative, as staffing limitations and resources allow for review of the proposed projects.

### **New Operations**

The reasonably foreseeable development scenario presented in the plan/EIS includes geophysical exploration (2-D seismic surveys) and up to 25 wells (0 to 20 in Big South Fork NRRRA and 0 to 5 wells directionally drilled from locations outside of Obed WSR) over the next 15 to 20 years. The wells at Big South Fork are projected to include 0 to 5 with surface locations outside the park, and 0 to 5 completed as horizontally drilled wells in the Chattanooga shale, which are expected to use hydraulic fracturing technology. New operations will be subject to CLPRs, including 9B regulations, SMA restrictions as previously discussed, and the requirements for a plan of operations.

Geophysical exploration will not be allowed in any of the SMAs, or the associated setbacks, at Big South Fork NRRRA, with the exception of the Special Scenery SMA, unless authorized in an approved plan of operations. While an operation may be allowed to occur in an SMA (based on mitigation in an approved plan of operations), gorge and deed restrictions will still apply.

Timing stipulations for geophysical operations will apply in the SMAs for visitor use/administrative areas, trails, and cemeteries. At Obed WSR, all federal property within the boundaries of the park unit will be subject to No Surface Use at all times of the year. As a result, SMAs could restrict exploration operations on up to approximately 10,943 acres of minerals at Big South Fork NRRRA and 3,712 acres at Obed WSR. This total does not include any areas deemed eligible for the Special Scenery SMA which will be addressed on a case-by-case basis during the preparation of plans of operation. This total is also subject to change based on mitigation that could allow operations in SMAs, or any increase or decrease in setbacks for a particular operation.

Drilling and production will not be allowed in any of the SMAs or the associated setbacks at Big South Fork NRRRA, unless authorized in an approved plan of operations. While an operation may be allowed to occur in an SMA (based on mitigation in an approved plan of operations), gorge restrictions will still apply. As with geophysical exploration, timing stipulations for drilling and production will apply in the SMAs for visitor use/administrative areas, trails, and cemeteries at this park unit. Timing stipulations will also apply in the Special Scenery SMA for drilling operations. Production activities will be allowed in the Special Scenery SMA based on the outcome of the viewshed analysis required under this alternative. At Obed WSR, all federal property within the boundaries of the park unit will be subject to No Surface Use at all times of the year. As a result, SMAs could protect approximately 11,587 acres of private mineral lands present at Big South Fork NRRRA and 3,712 acres at Obed WSR. It should be noted, however, that this acreage number does not include the contribution from Special Scenery SMAs, as these will need to be evaluated on a case-by-case basis for each proposed operation. This total is also subject to change based on mitigation that could allow operations in SMAs, or any increase or decrease in setbacks for a particular operation. None of the area where exploration, drilling, or production may be limited occurs on private lands found within the boundary of Big South Fork NRRRA or Obed WSR.

### **Plugging and Reclamation Activities/New Management Framework for Well Plugging**

Generally, plugging and reclamation activities will be guided by the 9B or state regulations, and environmental compliance for these operations will be conducted on a case-by-case basis in both park units. However, alternative C includes a new management framework to efficiently complete the compliance process for the plugging and reclamation of inactive wells that represent potential threats to park resources and values. For existing operations exempted from the 9B regulations, plugging and reclamation will be conducted per state regulations, although many wells will have new surface

disturbance associated with the action or some other action, such as a change in owner or operator status, that will trigger the 9B regulations and the new management framework. Existing operations that do not have the grandfathered exemption will be plugged and associated sites reclaimed in accordance with the 9B regulations, regardless of whether or not the operator or NPS plugs the well. These operations will also be subject to the provisions of an approved plan of operations or special use permit, as appropriate. In all circumstances, the NPS will provide on-site oversight to ensure plugging and reclamation standards are met.

It is assumed that about 50 wells at Big South Fork NRRA and five wells at Obed WSR will be plugged and associated sites reclaimed over the life of this plan.

The intent of the new management framework for well plugging is to describe and analyze the components of plugging/reclamation activities, analyze the impacts in the plan/EIS, and enable subsequent environmental compliance for these wells by using the analysis in the EIS in a streamlined process. A number of steps will be implemented under the selected alternative to determine the appropriate approach to the components of the plugging and reclamation activities under the new management framework.

When a project is proposed, a survey of the site, including surveys for sensitive species and cultural resources, will be conducted to refine the resource information and the access, plugging, and reclamation activities that will be implemented. After a well site has been surveyed, park unit resource managers will collaborate to determine specific desired conditions that are to be achieved when plugging and reclaiming the particular site (e.g., specific goals related to access, plugging, and reclamation). Once decisions have been made on the appropriate actions to be taken for gaining access, plugging, and reclaiming a site, park unit managers will then determine the appropriate compliance pathway. The plan provides guidance to help staff of Big South Fork NRRA and Obed WSR determine the compliance requirements for each plugging and reclamation project.

General guidelines for access, well plugging, and reclamation activities are described in the plan/EIS, and include goals or desired conditions related to each of these. The compliance pathway (as detailed in figure 7 on page 79) is outlined as a decision tree that will be used to confirm that future well plugging and reclamation projects comply with NEPA and other regulatory requirements (e.g., the Endangered Species Act and the National Historic Preservation Act). Park unit staff will confirm that a proposed plugging/reclamation project, and the associated effects have been considered by reviewing site-specific conditions and the impacts analyses in the plan/EIS. The park unit staff will also confirm whether environmental conditions have or have not changed from what is presented in the plan/EIS. If a new method of plugging or reclamation (such as modified equipment needs or site preparation for reclamation) were developed and considered for use, the NPS must also determine whether these new methods are similar to ones already addressed in the plan/EIS and that the effects would also be similar.

If a well plugging and reclamation project and its effects are determined to have been adequately addressed in the plan/EIS, the site-specific NEPA compliance document could be a memo to file. The memo will describe the site-specific impacts and explain why they are within the scope of impacts considered in the plan/EIS. If it is determined that a proposed well plugging and reclamation project and its effects are not addressed in the plan/EIS, preparation of an EA or EIS (depending on the extent of the impacts) will be required. Other federal, state, and local laws may also have information requirements that overlap with NEPA. The compliance review will also confirm that the proposed project has addressed these other requirements.

## **Road Standards**

Minimum standards for new and existing roads are detailed in the final plan/EIS. Road standards will be developed on a case-by-case basis with the operator, and, depending on whether or not these roads are dedicated to oil and gas operations, or provide some sort of recreational or administrative access, the standards can differ substantially (see appendix E of the final plan/EIS). Road standards based on the Big South Fork GMP were also developed for the plugging and reclamation new management framework. While access roads may be subject to frequent use by operators when operations are active, the access roads will not be authorized for recreational trail use, unless access is on foot. The use of all-terrain vehicles in the park unit is an ongoing issue subject to management and enforcement actions. If any of these routes are proposed for recreational uses, they will ultimately need to meet the standards described in the GMP for the proposed use (either during or after the operation).

## **Increased Inspections and Monitoring**

Site inspections and monitoring will be expanded beyond those activities conducted when problems and emergencies are reported, or when there are requests from operators. Current operations as well as new drilling, production, plugging, and reclamation activities will be more frequently monitored for compliance with the 9B regulations; consistency with the RFD scenario; compliance with the standards in the new management framework for plugging and reclamation activities; compliance with road standards; as well as other miscellaneous inspections (e.g., periodic stormwater testing and surveys for invasive plant species).

## **Acquiring Mineral Rights on a Case-by-Case Basis**

Under the selected alternative, the NPS will consider the acquisition of mineral rights through existing land acquisition programs. The NPS will seek to acquire mineral rights on a case-by-case basis from willing sellers. These acquisitions will be based on an updated land protection plan and the NPS will set priorities for which rights to acquire based on the availability of willing sellers, sensitivity of resources, size of the area, economic feasibility, and available funding.

## **Administrative and Planning Responsibilities**

Implementation will increase the administrative and planning responsibilities of park staff, including providing guidance to operators developing plans of operations; reviewing plans of operations and preparing environmental compliance documents; reviewing proposed plugging and reclamation activities per the new management framework and subsequent environmental compliance; coordinating plugging and reclamation activities and providing oversight during such operations; and identifying responsible parties. In addition, staff activities will include increased inspections/ monitoring and response to emergency situations.

## **Outreach and Education**

The NPS may offer training and workshops and provide information and helpful tools to operators by disseminating brochures and conducting presentations. In addition, the NPS will increase coordination and collaboration with the state, oil and gas associations, and operators by working with them to integrate NPS-specific requirements into their training programs, and by jointly participating in public and other meetings, where appropriate.

## **Statutory and Regulatory Requirements and Mitigation Measures**

The NPS developed tables of statutory and regulatory requirements (referred to as operating stipulations), as well as recommended mitigation measures, for implementing the selected alternative. These tables are presented in appendix B of the final plan/EIS, and address all phases of non-federal oil and gas operations, including geophysical exploration; drilling and production operations (including measures that apply to roads, drilling, production, or flowlines and pipelines); and plugging, abandonment, and reclamation requirements. The tables also specify which resource(s) will be protected by the particular operating stipulation or mitigation measure. These measures will apply to any type of oil or gas operation; however, if hydraulic fracturing is used, the following mitigation measures will also be required:

- Specific chemicals and their quantities used in operations must be disclosed so that the appropriate containment and disposition requirements can be employed to minimize the risk of contaminants affecting park resources.
- Less toxic chemicals should be used if technically feasible (i.e., replacement of diesel with a less toxic carrying fluid).
- Well construction standards (i.e., surface casing and cementing) above those required by the state must be followed to enhance isolation and protection of usable quality water zones.
- Water must be obtained from sources outside the park. These sources will be identified and evaluated in future plans of operation.
- Wastewater must be stored in tanks (not pits) and disposed of outside the park. Disposal options will be identified and evaluated in future plans of operation.
- Comprehensive information on the geologic conditions and hydraulic stimulation design parameters will be required in the plan of operations proposal, so that the NPS can evaluate the risk of vertical fracture growth to groundwater.
- Measurement of naturally occurring radioactive material levels in drill cuttings could be included in the operator's monitoring program, and appropriate handling and disposal methods will be required.

## **ENVIRONMENTALLY PREFERRED ALTERNATIVE**

Alternative C was selected as the NPS environmentally preferred alternative. Compared to the other alternatives considered (see below for descriptions of alternative A (no action) and alternative B), alternative C provides additional protection to park resources through identification of SMAs and protection of these resources through either avoidance of SMAs or additional mitigation in approved plans of operations. Establishing SMAs under this alternative will provide the greatest opportunity to preserve important natural aspects in the long term. Although the types of impacts expected under alternative C are similar to those expected under alternative B, they will likely occur at a reduced intensity because of SMA recognition and protection. Like alternative B, alternative C also includes the new management framework for plugging of abandoned wells, resulting in an expedited process for well site cleanup and reclamation. Alternative A (no action) was not considered environmentally preferred because of its lack of proactive enforcement, and lack of a comprehensive plan and plugging protocol. Overall, alternative C will result in the least damage to the biological and physical environment and protect the parks' valuable cultural resources.

## **ALTERNATIVES CONSIDERED BUT NOT SELECTED**

### **Alternative A: No Action**

Under the “no action” alternative, Big South Fork NRA and Obed WSR would continue current oil and gas management practices and policies in the absence of a comprehensive plan that clearly defines strategies and guidance. The NPS would continue to work cooperatively with the state on regulations or enforcement, but would be somewhat limited in its ability to conduct inspections and monitoring of all operations on a regular basis and would defer to the state to notify operators about regulatory requirements and issues. Environmental compliance and permitting (NEPA, Endangered Species Act, National Historic Preservation Act) for plans of operations related to management of current operations and for new drilling and/or exploration would be conducted on a case-by-case basis in both park units with currently available staff and funding sources. Restrictions and protected areas identified in the CLPRs for each park unit (including the NPS 9B regulations) would be applied to new operations. Plugging and reclamation activities would be guided by the 9B or state regulations, as appropriate, and compliance for these operations would be conducted on a case-by-case basis in both park units.

### **Alternative B: Comprehensive Implementation of 9B Regulations and a New Management Framework for Plugging and Reclamation**

Alternative B would include the same elements as alternative C except for the designation and consideration of SMAs in the regulatory review process. Under alternative B, the NPS would proactively pursue enforcement of the 9B regulations and plans of operations and provide clear communication with the public and operators about CLPRs, including the 9B regulations. For current operations, the NPS would continue to work cooperatively with the state on regulations or enforcement, but would conduct increased inspections and monitoring and identify sites that are found to be impacting, or threatening to impact, park resources beyond the operations area to bring these into compliance. New operations would be reviewed and permitted in accordance with the restrictions and protected areas described in the CLPRs, similar to alternative A, but no SMAs would be identified for additional or special protection. The park would use the oil and gas management planning process to proactively share information with the public about regulatory requirements, to seek out operators to ensure information is communicated clearly and effectively, and to focus staff resources on the implementation and compliance with the regulatory framework. Alternative B would include the same new management framework for efficiently completing compliance processes necessary for plugging and reclamation of wells as described for the selected alternative C. Priority sites for plugging and reclamation would be identified using criteria developed for the plan/EIS and would not necessarily include areas that are designated as SMAs under the selected alternative.

## **BASIS FOR DECISION**

To identify the preferred alternative, the planning team evaluated each alternative based on its ability to meet the plan objectives (see table 9 of the final plan/EIS) and the potential impacts on the environment (see “Chapter 4: Environmental Consequences” of the final plan/EIS, and the summary of impacts in table 10 on page 106 of the FEIS). Alternative C was identified as the NPS preferred alternative.

Alternative C fully meets seven of the nine planning objectives (see table 9 of the final plan/EIS) and meets the other two to a large degree. Alternative B fully meets only three of the nine objectives and meets the others to a large degree, while the no-action alternative fully meets only one objective (hence the need for the plan). With the addition of SMAs, alternative C best identifies and protects resources from adverse effects of oil and gas operations, including protection of water resources, species of management concern, and cultural resources. It also best minimizes or mitigates conflicts between oil and gas operations and visitor use by buffering some visitor use areas from operations and identifying

regulatory and other requirements up front with SMA designations. It is equivalent to alternative B in protecting human health and safety, providing guidance to operators, and establishing an efficient well plugging process, as both include the new management framework for well plugging and reclamation. Although alternative B provides owners and operators with less restrictive access, alternative C also provides reasonable access because it has provisions for addressing resource concerns as additional mitigation in approved plans of operation (or using directional drilling) in lieu of limiting surface use entirely in SMAs, where appropriate and when approved in a plan of operations.

## **PUBLIC SCOPING**

Public scoping for the plan/EIS began with the publishing of the Notice of Intent in the Federal Register on May 31, 2006. On July 13, 2006, a Public Scoping Brochure for the Oil and Gas Management plan/EIS was released for public review and comment. The public was invited to submit comments on the scope of the planning process and potential alternatives through September 26, 2006. During the public scoping period, four public scoping workshops were held in Jamestown, Huntsville, and Oak Ridge, Tennessee; and in Whitley City, Kentucky. Park staff and other NPS specialists were on hand to answer questions and provide additional information to workshop participants. Please see chapter 5 of the final plan/EIS for information about the public scoping comment analysis process and the nature of the comments received.

### **Public Review of the Draft Plan/EIS**

A Notice of Availability for the draft plan/EIS was published by the NPS on June 15, 2011, and by the U.S. Environmental Protection Agency (EPA) on June 17, 2011. Following the release of the draft plan/EIS, a 60-day public comment period was open between June 17, 2011 and August 16, 2011. This public comment period was also announced on the parks' websites ([www.nps.gov/biso](http://www.nps.gov/biso), and [www.nps.gov/obed](http://www.nps.gov/obed)); through mailings sent to interested parties, elected officials, and appropriate local and state agencies; and by press releases and newspapers. The draft plan/EIS was made available through several outlets, including the NPS Planning, Environment, and Public Comment (PEPC) website at [http://parkplanning.nps.gov/biso\\_obri\\_deis](http://parkplanning.nps.gov/biso_obri_deis), in local libraries, and was available on CD or hardcopy by contacting the park Superintendent. After reviewing the draft plan/EIS, the public was encouraged to submit comments regarding the draft plan/EIS through the NPS PEPC website, at the public meetings, or by postal mail sent directly to the park.

During the public review and comment period, five public meetings were held to present the plan, provide an opportunity to ask questions, and facilitate public involvement and community feedback on the draft plan/EIS for oil and gas management at Big South Fork NRRRA and Obed Wild WSR. The public meetings were held in Huntsville, Oak Ridge, Jamestown, and Wartburg, Tennessee; and in Whitley City, Kentucky. The meetings were a combination of an open house format with formal presentation, and provided attendees the opportunity to ask questions, observe informational displays, and make comments in person. Those attending the meeting were also given a public meeting informational handout, which provided additional information about the NEPA process, commonly asked questions regarding the project, and additional opportunities for comment on the project, including directing comments to the NPS PEPC website.

All comments received were analyzed to identify common concerns or issues for response from the NPS. Please see chapter 5 of the final plan/EIS for information about the draft plan/EIS public comment analysis process and the nature of the comments received. Members of the NPS planning team responded to the substantive concerns in appendix N of the final plan/EIS, and responses include references to the final plan/EIS where changes were made based on public comment received. Generally, changes made as

a result of public comment were factual in nature and did not result in changes to the NPS preferred alternative or the outcome of the impact analysis for any of the management alternatives considered.

The final plan/EIS was available for public inspection for a 30-day no-action period, which began with the publication of the Environmental Protection Agency Notice of Availability of the final plan/EIS on July 20, 2012, and ended on August 18, 2012. As with the draft plan/EIS, the NPS issued its own *Federal Register* Notice of Availability of the final plan/EIS, and also announced the availability on the parks' websites ([www.nps.gov/biso](http://www.nps.gov/biso), and [www.nps.gov/obed](http://www.nps.gov/obed)); through mailings sent to interested parties, elected officials, and appropriate local and state agencies; and by press releases and newspapers. The final plan/EIS was made available through several outlets, including the PEPC website at [http://parkplanning.nps.gov/biso\\_obri\\_final\\_ogmp](http://parkplanning.nps.gov/biso_obri_final_ogmp), in local libraries, and was available on CD or hardcopy by contacting the park Superintendent.

## **Agency Consultation**

### *United States Fish and Wildlife Service*

Formal consultation under section 7 of the Endangered Species Act was not required for this programmatic plan, since no on-the-ground actions are authorized by approval of this plan. All plans of operation that are done pursuant to this plan for proposed oil and gas projects will need to have a biological survey completed if directed by the NPS, and the NPS will consult with the USFWS on a project-by-project basis per Endangered Species Act requirements for each project. However, the NPS consulted with the U.S. Fish and Wildlife Service (USFWS) during the initial scoping period to identify issues related to threatened and endangered species. The NPS also sent a copy of the draft plan/EIS to USFWS offices in both Kentucky and Tennessee. Please see chapter 5 of the final plan/EIS for more information about consultation with the USFWS.

### *State Historic Preservation Offices*

Because no on-the-ground actions are authorized by approval of this plan, consultation under section 106 of the National Historic Preservation Act was not required. The NPS will be required to consult with both Tennessee and Kentucky State Historic Preservation Offices on a project-by-project basis pursuant to section 106 to evaluate the adequacy of cultural resources information and to assess and mitigate effects of oil and gas projects on cultural resources. However, copies of the draft plan/EIS were sent to the Tennessee and Kentucky Historic Preservation Offices for comment related to cultural resources. Please see chapter 5 of the final plan/EIS for more information about consultation with the State Historic Preservation Offices, and appendix N for written responses received on the draft plan/EIS.

## **Tribal Consultation**

As required by Section 106 of the National Historic Preservation Act of 1966, as amended, the NPS invited the following tribes to provide their input to the plan/EIS during initial scoping: the Cherokee Nation, the Chickasaw Nation, the Eastern Band of Cherokee Indians, the Eastern Shawnee Tribe of Oklahoma, the United Keetoowah Band of Cherokee Indians in Oklahoma, the Shawnee Tribe, and the Absentee-Shawnee Tribe of Oklahoma. A copy of the draft plan/EIS was also provided to the seven tribes, with a letter updating the various alternatives, explaining the status of the plan/EIS, and soliciting comment. Please see chapter 5 of the final plan/EIS for more information about tribal consultation with the USFWS. Documentation of letters sent and written responses can also be found in appendix M of the final plan/EIS.

## CONCLUSION

Overall, among the three alternatives considered, the selected action best meets the purpose, need, and objectives of the plan/EIS and is expected to support the long-term protection, preservation, and restoration of natural and cultural resources at Big South Fork NRRRA and Obed WSR. It incorporates all practical means to avoid or minimize environmental harm and will not result in the impairment of park resources and values or violate the NPS Organic Act.

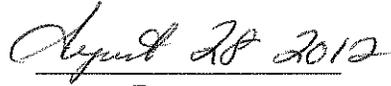
The required “no-action period” before approval of the ROD was initiated on July 20, 2012 with the U.S. Environmental Protection Agency’s *Federal Register* notification of the filing of the final plan/EIS (Volume 77, FR Number 140).

The official responsible for implementing the selected action is the Superintendent of Big South Fork National River and Recreation Area, Tennessee and Kentucky, and Obed Wild and Scenic River, Tennessee.

**Recommended by:**



Niki Stephanie Nicholas  
Superintendent  
Big South Fork National River and Recreation Area  
Obed Wild and Scenic River

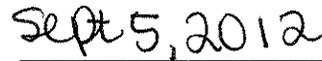


Date

**Approved by:**



David Vela  
Regional Director,  
Southeast Region, National Park Service



Date

## REFERENCES

National Park Service (NPS), U.S. Department of the Interior

1993 Obed Wild and Scenic River Resource Management Plan. Wartburg, Tennessee.

2006 Big South Fork National River and Recreation Area Fields Management Plan. March 2006. Oneida, Tennessee.

## ATTACHMENT A: NON-IMPAIRMENT DETERMINATION

Pursuant to the NPS Guidance for Non-Impairment Determinations and the NPS NEPA Process (NPS 2011), a non-impairment determination for the selected alternative is included here as an appendix to the Record of Decision.

Chapter 1 of the final plan/EIS describes the related federal acts and policies regarding the prohibition against impairing park resources and values in units of the national park system. The prohibition against impairment originates in the NPS Organic Act, which directs that the NPS shall:

promote and regulate the use of the...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

According to *NPS Management Policies 2006*, an action constitutes an impairment when its impact “would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2006, sec. 1.4.5). To determine impairment, the NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS 2006, sec. 1.4.5).

National park system units vary based on their enabling legislation, natural and cultural resources present, and park missions. Likewise, the activities appropriate for each unit and for areas in each unit also vary. For example, an action appropriate in one unit could impair resources in another unit.

As stated in the *NPS Management Policies 2006* (NPS 2006, sec. 1.4.5), an impact on any park resource or value may constitute an impairment, but an impact would be more likely to constitute an 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; or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park’s general management plan or other relevant NPS planning documents as being of significance

The resource impact topics carried forward and analyzed for the NPS selected alternative in the final plan/EIS, and for which an impairment determination is contained in this ROD, are: geology and soils, water resources, floodplains, wetlands, vegetation, wildlife and aquatic species; federally listed threatened and endangered species, species of special concern, soundscapes, and cultural resources. The following describes each resource or value for which impairment is assessed and the reasons why impairment will not occur. However, for all the resources listed below:

- In the case of Big South Fork NRR, the park’s enabling legislation states that the Secretary of the Interior shall allow mineral exploration and development, subject to appropriate regulations. Thus, the NPS must provide for these activities while protecting resources for the enjoyment of future generations.
- A site-specific analysis of the potential for impairment of park resources and values will be required on all proposed oil and gas projects in the park. The analysis must be included in the

decision document on the plan of operations for all oil and gas projects and will ensure that impairment of resources will not occur. Also, under all alternatives, if mitigation measures are not adequately applied during the conduct of nonfederal oil and gas operations, there could be impacts on park resources and values. If this were to occur, the NPS will be required to suspend the operation until appropriate mitigation is applied. If mitigation is not technically feasible to avoid the impairment, the oil and gas operation will not be allowed to continue.

- If an accidental spill of hydrocarbons or other contaminating substance were to occur in the park, there could be major, short-term, adverse impacts particularly to water, vegetation, wetlands, soils, fish and wildlife resources. Even if there were a catastrophic spill, the site will be remediated so that effects will not result in an impairment of park resources and values.
- SMAs have been designated in alternative C to protect resources and values particularly susceptible to adverse impacts from oil and gas operations. Geology and soils, water resources, floodplains, wetlands, sensitive vegetation communities, and specific visitor use areas will be provided specific protection. Operating stipulations in SMAs, including setbacks and a No Surface Use stipulation (unless otherwise authorized in a plan of operations) will be required to avoid or minimize adverse impacts and will further reduce the likelihood of impairment of resources and values in the park.
- Due to the designation of SMAs under alternative C, more wells may be directionally drilled from outside the park to develop hydrocarbons underlying the park. While indirect impacts on park resources and values could be greater from directional wells drilled from outside the park compared to operations inside the park, park resources and values will not be impaired by directional drilling and production. In some cases, directional drilling proposals will involve other federal agencies applying other permitting requirements (i.e., *Clean Water Act* Section 504 permitting). The NPS will participate with the other federal entity through its permitting process to request any necessary mitigation measures be applied to reduce the potential for major adverse impacts on park resources and values. If NPS is the only federal entity involved, and a directional drilling and production proposal could pose major adverse impacts on park resources and values, the NPS will need to base its § 9.32(e) exemption on the findings of an EIS. In most cases, operators could preclude the need to prepare an EIS by locating directional wells a sufficient distance from the park, and applying other necessary mitigation measures to reduce impacts.

## **Geology and Soils**

Both parks are located in the Cumberland Plateau, which is characterized by flat or rolling upland areas, deeply incised river gorges, and a long line of cliffs that separate it from the lower elevations of the Ridge and Valley Province, which begins at the Cumberland Plateau's eastern escarpment. Both parks have soils that are representative of the Cumberland Plateau with a wide range of compaction, erodability, and runoff characteristics. Both parks are also known for their important geologic features including prominent rock formations, as well as the massive gorges and accompanying bluffs.

The parks' geologic qualities and features are necessary to fulfill the purposes for which the parks were established and are key to the natural integrity of the park. Geologic resources and geologic features of the parks, including the gorges, bluffs, cliff lines, arches, and other geologic formations, are specifically identified in the parks' enabling legislation and planning documents.

Actions in the preferred alternative include oil and gas exploration and development that will cause both short-term and long-term adverse impacts on soils and geological features. The designation of SMAs will limit the effects on geology and soils within SMA boundaries. Limiting drilling and production operations in the Sensitive Geomorphic Feature and Cliff Edge SMAs will reduce the degree of adverse impacts on soils and sensitive geomorphic features susceptible to adverse impacts from oil and gas operations.

However, the construction and maintenance of access roads, wellpads, flowlines, and pipelines could erode, compact, and rut soils; introduce non-native construction materials (e.g., gravel); reduce soil permeability; and releases of hazardous or contaminating substances during drilling or production operations could adversely affect soils.

In the case of Big South Fork NRRRA, where new drilling and production operations will be allowed, an average 14-foot-wide road (including shoulders and turnouts) 1/4 mile in length would disturb approximately 0.85 acre of soil. Clearing and soil disturbance could be less for some operations, and greater for operations involving hydraulic fracturing where larger vehicles will need to access the site. Elevated pads for drilling and production operations may disturb between 1.5 to 4 acres of soil per site, depending on whether or not horizontal drilling and hydraulic fracturing are used. Under the forecast of oil and gas activities, this will result in approximately 48 acres of new disturbance at Big South Fork NRRRA, resulting in localized, short-term (construction activities and drilling operations) to long-term (roads, production operations, and flowlines and pipelines), moderate, adverse impacts from construction of oil and gas facilities.

However, the new management framework for plugging and reclamation will promote efficient plugging and reclamation of abandoned wells to applicable standards. During plugging and reclamation activities between both park units, approximately 50 wells are expected to be plugged and associated sites reclaimed, resulting in the reclamation of approximately 87 acres of land. This will ultimately enhance natural conditions in the park.

The NPS recognizes that unplanned incidents associated with oil and gas operations such as well blowouts, fires, and major spills within the boundaries of the park present a risk of release of contaminants that can adversely impact soils and geological resources. However, the incident rates for such incidents are low and are not a typical expectation of project implementation. If such an incident did occur, required mitigation measures such as use of blowout preventers and implementation of Spill Prevention, Control, and Countermeasures (SPCC) plans will lessen the potential for spilled substances or a well fire to spread into the park, and for timely response and cleanup. Therefore, no matter which type of operation is used for drilling and production (conventional or fracturing), there is a reasonable expectation that long term adverse impacts will not occur or be limited to minor to moderate levels of intensity, although there could be short-term major adverse effects during the release.

Overall, adverse impacts to geology and soils will be relatively limited given appropriate mitigation, and will be offset by the expected well plugging and associated reclamation of previously disturbed lands, and additional protections afforded by establishment of SMAs. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of geology and soils under alternative C.

## **Water Resources**

One of the primary reasons the Big South Fork NRRRA was established was to preserve the Big South Fork of the Cumberland River as a natural, free-flowing stream for the benefit and enjoyment of present and future generations. The Big South Fork River is formed by the New River and the Clear Fork, and drains the northern portion of the Cumberland Plateau in Tennessee. As the Big South Fork flows from south to north, it is fed by a variety of sources ranging from perennial streams, such as North White Oak Creek, to many ephemeral creeks. The Obed River flows east for approximately 45 miles to its junction with the Emory River, of which it is the largest tributary (NPS 1998). The Obed River drains approximately 520 square miles at its mouth (NPS 1998). The two principal tributaries of the Obed River—Clear Creek and Daddys Creek—join the Obed River within the Obed WSR area.

The parks' water resources are necessary to fulfill the purposes for which the parks were established and are key to the natural integrity of the parks. The significance of Big South Fork NRRRA includes the free-flowing river system with a wide variety of habitats, including a world-class mussel assemblage. It is designated as a Tier III Outstanding Natural Water under the *Clean Water Act*. The significance of the Obed River's Wild and Scenic River designation is described in its Strategic Plan. It is one of the last remaining wild rivers in the eastern United States, and is designated as a Tier II Outstanding Natural Water under the *Clean Water Act* because of its superior water quality.

Gorge restrictions at Big South Fork NRRRA, deed restrictions at Obed WSR, and the regulatory requirement that surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent, or ephemeral watercourses or within 500 feet of the high pool shoreline of natural or man-made impoundments (36 CFR 9.41(a)) will provide protection for park waters. In locations where water bodies fall within the 1,500-foot buffer provided for visitor use and administrative areas, additional protection of water resources could be anticipated. Establishing the Obed WSR SMA will preclude non-federal oil and gas operations (exploration, drilling, and production) on all federal lands in the park unit, providing additional protection of water resources.

Actions in the preferred alternative include oil and gas exploration and development that will cause both short-term negligible to moderate adverse impacts to water resources. In the event of catastrophic well failure or uncontrolled release, long-term or major adverse impacts to water resources will be unlikely because production sites will be placed at least 500 feet from water sources and remediation will be required. The long-term impacts of well development will be mitigated through site reclamation, and the preferred alternative includes actions to plug and reclaim existing sites that will remove sources of contamination and provide long-term beneficial impacts. Additionally, the new management framework for plugging and reclamation will promote efficient plugging and reclamation of abandoned wells to applicable standards. This will ultimately enhance natural conditions in the park.

Well servicing and drilling can include use of hydraulic fracturing well stimulation operations. Any wells proposed for completion in the Chattanooga shale will require use of fracturing to provide adequate production. These operations require large quantities of water and generate large quantities of produced flowback or waste water. However, the NPS will require that all water needed for these operations be trucked in from outside the park, the impacts of which will be analyzed on a case-by-case basis during review of the plan of operations. Any waste waters will need to be stored in tanks (not pits) and trucked off site to an approved disposal facility. Poor well construction, substandard well control practices, and surface mismanagement of contaminants are generally the causes for the impacts that have occurred to ground and surface waters from fracturing operations. Impacts could occur from leaks and spills, but these will not be different from the effects of unplanned incidents at any well site, as described above.

For any proposed hydraulic fracturing operation, the NPS will require and enforce all necessary safeguards to minimize or avoid impacts to resources and visitor uses. Mitigation measures that could be required depending on the nature of the operation are detailed in chapter 2 of the final EIS and include requirements to disclose chemical composition, use less toxic chemicals, adhere to strict well construction standards, provide documentation of design parameters, obtain water from offsite sources, and dispose of any waste water outside the park, as previously mentioned.

Based on these mitigation measures, combined with the 500-foot separation between groundwater resources and the Chattanooga shale, adverse impacts to surface or groundwater resources from hydraulic fracturing will be minor to moderate at most, since mitigation measures could be extensive but will likely be successful.

Taking into consideration the above discussion of effects upon water resources of oil and gas activities under the selected action, adverse impacts to water resources will be limited or controlled given appropriate mitigation and additional protections afforded by establishment of SMAs, and there will be beneficial effects from the planned well plugging and land reclamation that will restore cover and reduce erosion. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of water resources under alternative C.

## **Floodplains**

Floodplains have not been delineated in Big South Fork National River and Recreation Area. However, there are narrow floodplains in the gorge area, and small ones throughout the rest of the property. In the headwater areas of the major rivers within the area, slopes are steep, and floodplains are therefore not well-formed. Floodplains of limited extent increase in occurrence farther downstream. As with Big South Fork NRRRA, floodplains have not been delineated within Obed WSR. However, the extremely narrow, confined nature of this valley, and the associated high-energy water regimes, place a firm limit on the extent of natural floodplain development within the Obed WSR. Seasonally flooded habitat does exist, but it is on alluvial point bars, rather than on floodplains.

Although floodplains are not specifically identified as significant in the purpose and significance statements included in the enabling legislation or park planning documents, floodplains are important to the parks' free flowing systems and ecosystem health. Oil and gas operations could cause short and long-term, negligible to minor adverse effects on floodplains, mainly through road development. However, the 500-foot setback from rivers and streams required by the 9B regulations will provide a great deal of floodplain protection. Additionally, while none of the SMAs were developed to specifically protect floodplains, SMA restrictions will provide more consistent direct protection of floodplains. For example, in locations where floodplains occur within the 1,500-foot buffer provided for visitor use and administrative areas, additional protection of floodplain functions could be anticipated. The preferred alternative also includes actions to plug and reclaim existing wells, which will remove sources of contamination and structures in floodplains, and provide long-term beneficial impacts. The new management framework for plugging and reclamation will promote efficient plugging and reclamation of abandoned wells to applicable standards. This will ultimately enhance natural conditions in the park.

Oil and gas development on lands adjacent to floodplains will continue to have indirect effects. During drilling and production, spills or releases can also damage floodplain soils and vegetation. These impacts are not likely to differ substantially with the type of operation used for drilling and production (conventional or fracturing).

Alternative C will directly impact a relatively small area and contribute minimally to overall short-term adverse cumulative impacts. Alternative C will also provide long-term cumulative benefits due to its proactive management and enforcement, SMA identification and protection, and expedited well plugging. In the event of catastrophic well failure or uncontrolled release, impacts to floodplains will be unlikely because production sites will be set back from water courses.

Because adverse impacts of the preferred alternative on floodplains will not be considerable, and the contribution to overall adverse cumulative impacts will be limited, there will be no impairment of floodplains under alternative C.

## **Wetlands**

The parks contain approximately 2,800 acres of wetlands, the vast majority of which are associated with the parks' rivers (riverine) or lakes (lacustrine) and are permanently flooded. In addition, palustrine

wetlands (vegetated with varying inundation periods) compose just over 4 percent of the total wetland acreage. Although wetlands are not specifically identified as significant in the purpose and significance statements included in the enabling legislation or park planning documents, wetlands are an important habitat and critical to ecosystem health.

Under the preferred alternative, oil and gas operations could cause up to long-term minor adverse effects on wetlands, mainly through indirect impacts of potential sediment deposition from drilling, production, plugging, and reclamation activities. In the event of catastrophic well failure or uncontrolled release, long-term major adverse impacts will be unlikely, as wetlands will be protected by setback distances and spill prevention and required clean-up/remediation measures. However, oil and gas activities will not be expected to directly affect wetlands because of restrictions at Big South Fork NRR, deed restrictions at Obed WSR, and the regulatory requirement that surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent, or ephemeral watercourses or within 500 feet of the high pool shoreline of natural or man-made impoundments (36 CFR 9.41(a)) will provide protection for park wetlands, most of which are associated with river and stream channels. Additionally, while none of the SMAs were developed to specifically protect wetlands, wetlands will indirectly benefit from the SMAs and setbacks located in or near wetlands, or on the edges of the gorge, where spills could reach wetlands in the gorge. The preferred alternative also includes the new management framework for plugging and reclamation, which will promote efficient plugging and reclamation of abandoned wells to applicable standards. This will ultimately enhance natural conditions in the park.

Hydraulic fracturing operations will be subject to increased construction requirements and mitigation to reduce the possibility of adverse impacts. Mitigation related to hydraulic fracturing operations will require that wells be subject to increased construction requirements to reduce the possibility of adverse impacts. Also, mitigation will require that water be brought in, so any necessary withdrawals of ground and surface water are not likely to affect wetlands in the park. Ultimately, any potential impacts on wetlands associated with water obtained outside the park will be analyzed on a case-by-case basis during review of the plan of operations.

Overall, adverse impacts to wetlands will be relatively limited or avoided, given appropriate mitigation and additional protections afforded by establishment of SMAs. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of wetlands under alternative C.

## **Vegetation**

Both parks are located in the Cumberland Plateau, which is characterized by flat or rolling uplands, deep river gorges, and a long line of cliffs. A wide variety of vegetation communities occur in the parks – from coniferous forests to hardwood forests to deciduous shrublands – depending on elevation, slope, soils, and water availability. As described above in the Geology and Soils finding, approximately 48 acres of park lands will be disturbed by oil and gas activities, with 87 acres reclaimed.

Although vegetation is not specifically identified as significant in the purpose and significance statements included in the enabling legislation or park planning documents, vegetative communities are important as wildlife habitat and for ecosystem function and health.

Drilling and production of oil and gas, where permitted, will cause direct loss of vegetation and habitat as a result of clearing, contouring, construction, and maintenance of the pads, roads, flowlines, pipelines, and other ancillary facilities. Additional clearing or upgrading of access roads may be required for wells developed with hydraulic fracturing, since the roads need to accommodate larger trucks and more traffic. However, clearing will be limited to certain areas of excessive overgrowth or where pullouts may need to

be located, so this will have very minimal and localized effects on vegetation. Although short-term and long-term impacts from drilling and production will still occur, alternative C will result in enhanced protections for vegetation because of the SMA restrictions and other mitigation included in this alternative. For example, drilling and production operations will not directly impact vegetation in protected areas where operations will not be permitted under CLPRs. While none of the SMAs were developed to specifically protect vegetation, vegetative communities in many of the SMAs will benefit from new requirements. Therefore, there will be short- to long-term negligible to minor adverse impacts from drilling and production activities with a more limited risk of major adverse effects from spills or leaks. In the event of catastrophic well failure or uncontrolled release, impacts will be localized, and damaged sites will be reclaimed and replanted.

The new management framework for plugging and reclamation will promote efficient reclamation of abandoned wells to applicable standards. This will ultimately enhance natural conditions in the park. In addition, alternative C will make a beneficial, long-term contribution to overall cumulative impacts on native vegetation.

Overall, adverse impacts to vegetation will be relatively limited given appropriate mitigation, the expected well plugging and associated reclamation and revegetation of previously disturbed lands, and additional protections afforded by establishment of SMAs. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of vegetation under alternative C.

### **Wildlife and Aquatic Species**

One of the reasons the Big South Fork NRR was established was to conserve and interpret the unique wildlife of the gorges and valleys. A wide variety of vegetation communities occur in the parks, along with a corresponding wide variety of terrestrial and aquatic wildlife species. A total of 48 mammalian species, 180 bird species, and 28 reptiles inhabit the terrestrial acreage of the parks. Freshwater aquatic species include a diverse assemblage of fishes and aquatic invertebrates – including several mussel and crayfish species.

The Managed Fields SMA was developed partly to enhance wildlife habitat, and the SMA for Honey Creek and Twin Arches state natural areas was set aside primarily for their rich, undisturbed forest community. In general, there will be no surface use in these areas. Wildlife in the SMAs will benefit directly from restricted oils and gas access, restoration of disturbed lands, and enhanced habitat protection.

Under the preferred alternative, oil and gas operations could cause localized, short and long-term, minor adverse effects on terrestrial wildlife, as a result of disturbance and small amounts of habitat loss (up to 48 acres). Displacement of wildlife will continue from the initial wellpad construction phase into exploratory drilling, and if the well is placed in production, during the potentially long life of the producing well. Road and pad development and drilling operations will reduce the usable habitat for large carnivores as well as their prey species. Secure areas for large carnivores and prey species will be reduced and the risk of mortality will increase. This displacement and decrease in habitat will be slightly longer or more extensive for the 0 to 5 wells drilled using hydraulic fracturing. Regardless of whether conventional or fracturing technologies are employed during drilling and production operations, there is a reasonable expectation that long term adverse impacts from accidental release of hazardous substances will not occur or be limited to minor to moderate levels of intensity, although there could be short-term major adverse effects during the release.

However, the new management framework for plugging and reclamation will promote efficient reclamation of abandoned wells to applicable standards, and long-term habitat impacts will be mitigated through habitat reclamation of approximately 87 acres. This will ultimately enhance natural conditions in the park. In addition, alternative C will make a limited contribution to overall adverse cumulative impacts on wildlife.

Aquatic species will be adversely affected by short-term changes in water quality, producing localized minor adverse impacts. In the event of catastrophic well failure or uncontrolled release, long-term major adverse impacts to aquatic species will be unlikely, as aquatic environments will be protected by setback distances and spill prevention and required clean-up/remediation measures. In addition, alternative C will make a limited contribution to overall adverse cumulative impacts on aquatic species.

The possibility of any effect on aquatic species from hydraulic fracturing is remote. The formation where fracturing will occur is separated by a minimum of 500 feet from groundwater that could feed surface streams, and the wells will need to meet stringent NPS well construction standards for casing and cementing to prevent leaks into usable water quality zones. Mitigation required for fracturing operations prohibits withdrawing water from park streams or groundwater resources. Also, waste water must be stored in secure tanks and disposed of off site, not in any park waters. Ultimately, any potential impacts associated with water obtained outside the park or off-site waste water disposal will be analyzed on a case-by-case basis during review of the plan of operations. Spills and leaks that could reach surface waters will have the same impacts as described for other oil and gas operations.

Overall, adverse impacts to wildlife and aquatic species will be relatively limited given appropriate mitigation and additional protections afforded by establishment of SMAs, and lands reclaimed from well plugging will provide benefits to wildlife. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of wildlife and aquatic species under alternative C.

### **Federally Listed Threatened and Endangered Species**

Big South Fork NRRRA is home to 17 species that are protected under the Endangered Species Act. Of these, there are ten freshwater mussel species and three fishes in park waters. Listed terrestrial species include four plants. Critical habitat within the park has been designated in stream reaches inhabited by a variety of mussel species. Within the Obed WSR, six listed species occur – one fish, two mussels, two plants, and one bat. The entire length of the Obed WSR has been designated as critical habitat for the spotfin chub. All these species will be protected during development of the plans of operations as a result of consultation required under the Endangered Species Act.

The 500-foot setback from water bodies required by the 9B regulations will provide a high level of protection for wildlife inhabiting water, and wetland vegetation within this protective zone which supports many listed species. For example, the 500-foot standard setback will provide primary protection to all of the fish and mussel species described in chapter 3 of the EIS, including the duskytail darter, blackside dace, spotfin chub, Cumberland bean mussel, little-winged pearl mussel, purple bean mussel, dromedary pearl mussel, and the spectaclecase mussel. Additional protection of these habitats will be provided by the wetlands and floodplains Executive Orders, NPS Director's Orders, and project-specific permitting requirements.

Listed species that occupy upland areas outside the 500-foot shoreline setbacks include bats (gray bat) and upland plants (Cumberland sandwort). Bat species could be affected by the presence of seismic crews and the noise associated with the surveys, but there will be little if any trimming of vegetation or clearing required. In addition, the Cliff Edge SMA will also protect listed species found in that location. Through

project-specific consultation with USFWS under the Endangered Species Act, and scoping with other state agency biologists, the setback could be increased.

Under the preferred alternative, most impacts from oil and gas operations will come from the construction of new access roads and wellpads. Drilling and production operations could range in duration from short term (weeks or months for well drilling and construction of roads, wellpads, flowlines, and pipelines) to long term (lasting 20 years or more for road, flowline, pipeline, well, and production operations). Construction and maintenance of roads, pads, flowlines, and pipelines could require vegetation clearing and could result in habitat loss. Displacement and decrease in habitat will be slightly longer or more extensive for the 0 to 5 wells drilled using hydraulic fracturing techniques. A limited risk of major adverse effects from spills or leaks will also be possible, but no long-term major adverse effects will be expected given the required setbacks and remediation requirements.

As described in the analysis of impacts to ‘Water Resources’ and ‘Wildlife and Aquatic Species,’ mitigation relating to water and wastewater requirements and the depth of the target formation in relation to surface waters will reduce or eliminate impacts to listed aquatic species from hydraulic fracturing operations. Spills and leaks that could reach surface waters will have the same impacts as described for other oil and gas operations. Ultimately, any potential impacts associated with water obtained outside the park or off-site waste water disposal will be analyzed on a case-by-case basis during review of the plan of operations.

Through the regulatory process under the Endangered Species Act, required biological surveys and consultations with USFWS and Tennessee Wildlife Resources Agency (TWRA) or other state agency biologists will result in identification of potential impacts on listed species and their habitat, and the implementation of an oil and gas management plan, the designation of SMAs, and the application of mitigation measures will result in short- to long-term negligible to minor adverse impacts on listed species.

Additionally, the new management framework for plugging and reclamation will increase the certainty that wells will be plugged and reclaimed to applicable standards. This will ultimately enhance natural conditions in the parks. In addition, the preferred alternative will make a limited contribution to overall adverse cumulative impacts on listed species and their habitats.

Overall, adverse impacts to federally listed threatened and endangered species will be relatively minimal given appropriate mitigation, requirements for consultation, and additional protections afforded by establishment of SMAs. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of federally listed threatened and endangered species under alternative C.

### **Species of Special Concern**

Together, the parks are home to a variety of state-listed species of special concern – eight mammals, ten birds, one reptile, two amphibians, ten aquatic invertebrates (mussels), nine fishes, and 44 plants. These species have been identified by the states of Tennessee and Kentucky as warranting special management concern, because they may become threatened in the future through habitat loss, commercial exploitation or other means. NPS policy requires that state-listed species, and others identified as species of special concern by the park, are to be managed in park units in a manner similar to those that are federally listed (NPS 2006).

Undertaking the required biological surveys and consultations with state agency biologists before approving a plan of operations, and beginning drilling and production activities, will result in

identification of potential impacts on species of special concern and their habitat. As described for threatened and endangered species above, implementation of alternative C will include the designation of SMAs, and the application of mitigation measures. Designation of the Cliff Edge SMA, Sensitive Geomorphic features SMA, and Managed fields SMA will help protect state-listed species found in those locations.

Impacts on species of special concern will be short to long term, negligible to minor, and adverse, and will be similar to those described for 'Wildlife and Aquatic Species' and 'Federally Listed Threatened and Endangered Species'. The assessment of drilling and production impacts applies to the entire development scenario, including the few wells that may be developed using hydraulic fracturing, although displacement and decrease in habitat will be slightly longer or more extensive for the 0 to 5 wells drilled using this technique. A limited risk of major adverse effects from spills or leaks will also be possible regardless of technique, but no long-term major adverse effects are expected given the required setbacks and remediation requirements.

Mitigation relating to water and wastewater requirements and the depth of the target formation in relation to surface waters will reduce or eliminate impacts to listed aquatic species from hydraulic fracturing operations. Ultimately, any potential impacts associated with water obtained outside the park or off-site waste water disposal will be analyzed on a case-by-case basis during review of the plan of operations.

Additionally, the new management framework for plugging and reclamation will increase the certainty that wells will be plugged and reclaimed to applicable standards. This will ultimately enhance natural conditions in the park. In addition, the preferred alternative will make a limited contribution to overall adverse cumulative impacts on species of special concern.

Overall, adverse impacts to state-listed species of special concern will be relatively limited given appropriate mitigation and additional protections afforded by establishment of SMAs. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of state-listed species of special concern under alternative C.

## **Soundscapes**

The natural sounds within a park unit are frequently cited as an important part of the visitor experience, and protecting parks from high levels of intrusive sounds is a growing concern. Although no formal studies of the parks' acoustic environments have been conducted, using data from the Great Smoky Mountains, it is assumed that ambient sounds range from 26 to 43 dBA. These sound levels are a mixture of natural sounds associated with forest and shrubland habitats. The natural soundscapes of both Big South Fork NRR and Obed WSR are affected primarily by vehicular noise, both inside and outside the park boundaries. Oil and gas exploration and production also affect the natural soundscape locally and for limited periods of time.

Because management actions, particularly road building and drilling, could continue over a period of months, impacts are both short and long-term. During exploration, drilling, production, and site reclamation, oil and gas operations will have the potential to affect the natural sounds within the park. However, impacts will be no greater than moderate (i.e., unnatural sounds from oil and gas operations will not mask natural sounds for extended periods of time such that they will be commonly present throughout the park over the life of the management plan), and a maximum of 20 new wells are planned within the parks. SMAs and associated setbacks will reduce noise levels within the SMAs because the noise source will be located further from the sensitive resources within the SMA. Elevated noise levels will continue to occur in operational locations. Hydraulic fracturing operations also tend to take a few weeks longer to drill and produce, which will add to the duration of the noise impacts, although the effect

will still be a short-term impact. There will also be long-term beneficial impacts on soundscapes in the park from the restoration of vegetation (in areas where depleted wells are plugged) that will aid in attenuation of unnatural sounds. The preferred alternative will make a limited contribution to overall adverse cumulative impacts on the natural soundscapes within the parks.

Overall, adverse impacts to soundscapes will be relatively minimal and short-term, given appropriate mitigation and additional protections afforded by establishment of SMAs and their associated setbacks from sensitive receptors. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of soundscapes under alternative C.

## **Cultural Resources**

One of the primary reasons the Big South Fork NRR was established was to protect the cultural heritage of Cumberland Plateau and the record of human habitation contained therein. Humans have occupied the area for approximately 12,000 years, and the parks contain a rich and diversified cultural context. Archeological resources include ancient rock shelters, seasonal hunting camps, and more modern gristmills, moonshine stills, coal mines and saltworks. Historic structures and resources in the parks include farmsteads, transportation routes (railroads and canals), mines, and other engineering structures, all listed on or eligible for inclusion on the National Register of Historic Places. Cultural landscapes are defined based upon their association with historic events or persons. Big South Fork NRR includes the overall Big South Fork Rural Historic District, the Charit Creek Farmstead, and the abandoned townsite of No Business. In addition, the parks contain "ethnographic resources" that are of significance to American Indian Tribes.

Several of the SMAs proposed for alternative C were developed to protect cultural resources. The Sensitive Geomorphic Feature, Cliff Edge, Cultural Landscapes and Cemeteries and Managed Fields SMA all include No Surface Use measures to preserve these irreplaceable resources, and up to 1,500-foot setback for exploration near sensitive sites. A qualified third-party monitor will be present during drilling and plugging activities, consultation with seven American Indian tribes will be conducted as project-specific plans for oil and gas operations are developed, and setbacks required in the SMAs will be enforced or else mitigation will be provided in approved plans of operation that will provide comparable resource protection.

It is expected that geophysical exploration under alternative C will result in short- and long-term localized negligible to minor adverse impacts on cultural resources as a result of soil disturbance and vibrations. In areas where non-federal oil and gas operations will be permitted in the park, drilling and production activities under alternative C will have short-term and long-term negligible to minor adverse impacts on cultural resources as a result of impacts on soils, historic artifacts, and cultural landscapes. With consultation and mitigation, impacts to cultural resources will be localized (to a total of 48 acres), long-term, and no more than minor. For hydraulic fracturing operations, the impacts could be greater, due to the equipment and materials needed to drill a well and the potential duration of the operation. Eventual reclamation of these sites and the cessation of operations under alternative C will result in localized short-term and long-term negligible to minor adverse impacts and long-term beneficial impacts on cultural resources. There will also be long-term beneficial impacts from the restoration of vegetation and natural site appearance.

Overall, adverse impacts to cultural resources will be relatively limited given appropriate mitigation and additional protections afforded by establishment of SMAs. Additionally, the contribution to overall adverse cumulative impacts will be limited. As a result, there will be no impairment of cultural resources under alternative C.

## Summary

The NPS has determined that the implementation of the NPS preferred alternative (alternative C) will not constitute an impairment of the resources or values of Big South Fork NRRA or to Obed WSR. As described above, adverse impacts anticipated as a result of implementing the preferred alternative on 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 to opportunities for enjoyment of the park, or identified as significant in the park's GMP or other relevant NPS planning documents, will not constitute impairment. This conclusion is based on consideration of each park's purpose and significance, a thorough analysis of the environmental impacts described in the EIS, relevant scientific studies, the comments provided by the public and others, and the professional judgment of the decision-maker guided by the direction of the NPS *Management Policies 2006*.

## ATTACHMENT A REFERENCES

### National Park Service

- 1998 Obed Wild and Scenic River Water Resources Management Plan. August 1998. Wartburg, Tennessee.
- 2006 NPS *Management Policies 2006*. Washington, D.C.
- 2011 “Guidance for Non-Impairment Determinations and the NPS NEPA Process.”