



The Candler Building
127 Peachtree Street, Suite 605
Atlanta, GA 30303-1840
404-521-9900
Fax 404-521-9909
SouthernEnvironment.org

FAX COVER SHEET

DATE: April 16, 2012

TIME: 1:00 PM

TO: U.S. Department of Interior, Bureau of Land Management, Eastern States

FAX NUMBER: (703) 440-1551

FROM: The Southern Environmental Law Center

RE: Protest of BLM's Notice of Competitive Oil and Gas Lease Sale on June 14, 2012

Total number of pages (including cover sheet): 86 (part 1 of 2 faxes)

MESSAGE:

The Southern Environmental Law Center submits this Protest Letter and Attachments A and B on behalf of Wild South and the Natural Resources Defense Council in accordance with 43 C.F.R. 3120.1-3.

Please confirm by email to Katie Ottenweller at kottenweller@selcga.org before close of business today that you have received this Protest Letter and all related Attachments.

IF YOU HAVE RECEIVED THIS FAX IN ERROR, OR IF YOU ENCOUNTER PROBLEMS IN RECEIVING THIS TRANSMISSION, PLEASE CALL US IMMEDIATELY AT 404/521-9900.

Carolina's Office: 200 West Franklin Street, Suite 330, Chapel Hill, NC 27516-2559 919/967-1450
Georgia/Alabama Office: The Candler Building, 127 Peachtree Street, Suite 605, Atlanta, GA 30303-1800 404/521-9900

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 404-521-9900

THE CANDLER BUILDING
127 PEACHTREE STREET, SUITE 605
ATLANTA, GA 30303-1840

Facsimile 404-521-9909

April 16, 2012

VIA FACSIMILE: (703) 440-1551

Dr. John Lyon
Eastern States Office Director
United States Department of the Interior
Bureau of Land Management
Eastern States
7450 Boston Boulevard
Springfield, Virginia 22153

RE: Protest of the Bureau of Land Management's Notice of Competitive Oil and Gas Lease Sale Concerning Parcels in Alabama National Forests

Dear Dr. Lyon:

The Southern Environmental Law Center hereby submits this protest letter on behalf of Wild South and the Natural Resources Defense Council ("NRDC") in accordance with 43 C.F.R. § 3120.1-3.¹ Wild South and NRDC protest the Bureau of Land Management's ("BLM") planned offering of 36 parcels containing 43,038.30 acres of Federal lands in Alabama at the June 14, 2012 oil and gas lease sale.² The parcels are publicly owned lands of the Alabama

¹ All materials cited herein, the majority of which are readily available online, are incorporated in full herein by reference. The protesting parties have included two publications that may not be readily available online as Attachments A and B to this protest letter.

² The contested leases are: ES-001-06/12 ALES 057412 ACQ, ES-002-06/12 ALES 057413 PD, ES-008-06/12 ALES 057414 PD, ES-004-06/12 ALES 057415 ACQ, ES-005-06/12 ALES 057416 ACQ, ES-006-06/12 ALES 057417 ACQ, ES-007-06/12 ALES 057418 ACQ, ES-008-06/12 ALES 057419 ACQ, ES-009-06/12 ALES 057420 ACQ, ES-010-06/12 ALES 057421 ACQ, ES-011-06/12 ALES 057422 ACQ, ES-012-06/12 ALES 057423 ACQ, ES-013-06/12 ALES 057424 ACQ, ES-014-06/12 ALES 057425 ACQ, ES-015-06/12 ALES 057426 ACQ, ES-016-06/12 ALES 057427 ACQ, ES-017-06/12 ALES 057428 ACQ, ES-018-06/12 ALES 057429 ACQ, ES-019-06/12 ALES 057430 ACQ, ES-020-06/12 ALES 057431 ACQ, ES-021-06/12 ALES 057432 ACQ, ES-022-06/12 ALES 057433 ACQ, ES-023-06/12 ALES 057434 ACQ, ES-024-06/12 ALES 057435 ACQ, ES-025-06/12 ALES 057436 ACQ, ES-026-06/12 ALES 057437 ACQ, ES-027-06/12 ALES 057438 ACQ, ES-028-06/12 ALES 057439 ACQ, ES-029-06/12 ALES 057440 ACQ, ES-030-06/12 ALES 057441 ACQ, ES-031-06/12 ALES 057442 ACQ, ES-032-

National Forests, and will hereinafter be referred to as "the parcels" or "the leases." Almost all these parcels (about 42, 965 acres) are located on the Talladega National Forest, including roughly 28,000 acres on the Talladega and Shoal Creek Divisions and a little over 15,000 acres on the Oakmulgee Division. One 73.31-acre parcel is on the Conecuh National Forest.

Should BLM proceed with the planned sale of leases to over 43,000 acres of public lands, it will commit significant substantive and procedural violations of federal law. For the reasons stated below, the parcels should be withdrawn from this lease sale by BLM.

PROTESTING PARTIES AND THEIR INTERESTS

Wild South is a nonprofit conservation organization founded in Alabama and currently based in North Carolina, with offices in Moulton, Alabama, and Asheville, North Carolina. Wild South's staff and members regularly and repeatedly recreate in, seek solitude and otherwise enjoy the National Forests in Alabama, including parcels involved in this proposed lease sale. Wild South's staff and members regularly hike and enjoy the trails in these national forests. These recreational resources, their solitude, their wildlife (including listed endangered and threatened species) and their beauty are all things of great value to the staff and members of Wild South, who enjoy these areas regularly and have for many years (for some of them, all their lives).

Wild South also has a vested and long-standing interest in the protection and enjoyment of rare wildlife species in the National Forests in Alabama. Based upon information and belief, many endangered and/or threatened terrestrial and aquatic species potentially reside, or are just downstream or upstream from, the proposed lease sale areas. These habitats are protected under the Endangered Species Act. Terrestrial species, such as the Red-Cockaded Woodpecker, and aquatic species, such as mussels, are likely to be adversely impacted by hydraulic fracturing. As stated by the Final Environmental Impact Statement for the Revised Land and Resource Plan for the National Forests in Alabama (Jan. 2004) (hereinafter the "2004 FEIS") for these forests:

"The National Forests in Alabama serve as important habitat reserves for listed aquatic species and biodiversity in general. Geographically, the National Forests encompass less than 3% of the State's land mass but support over 60% of the listed freshwater species.

"There are 25 aquatic federally listed endangered or threatened species associated with the National Forests in Alabama, representing half of all listed species. Listed aquatic species include 14 endangered and 11 threatened species.

Mollusks compose nearly 75% of the aquatic listed species with 12 mussels and 6 snails. Additionally, there are six listed fishes and one turtle. According to the species viability assessment, over 50% of the listed aquatic species (14) are rated as being at a high level of risk for loss of population viability. Among those with the highest viability risks include the dark pigtoe, Cumberlandian combshell, orangenacre mucket, pygmy sculpin, and flattened musk turtle."

2004 FEIS at 3-207.

Wild South's staff and members have also invested decades of work with the Forest Service in developing forest-scale restoration plans for each of these forests. Increased exploration and development of oil and gas in these areas, especially when done without the required ESA consultation and NEPA analysis, will damage, if not destroy, the long-term investments being made in restoration of the native forest ecosystems in these forests.

Natural Resources Defense Council ("NRDC") is a non-profit environmental membership organization with more than 565,000 members throughout the United States. Over 6,000 NRDC members and activists reside in Alabama. NRDC members use and enjoy national forest lands in Alabama, including the specific lands at issue in this protest. NRDC members use these public lands for a variety of purposes, including: recreation, solitude, scientific study, and conservation of natural resources. NRDC has had a longstanding and active interest in the protection of the nation's public lands. For many years, NRDC has worked with both the Bureau of Land Management and the Forest Service to enhance public participation in government decision making and to protect important lands, wildlife, and resources.

The Southern Environmental Law Center is a regional non-profit organization working to conserve the environment and health of the Southeast, including natural resources on public lands in Alabama. Headquartered in Charlottesville, Virginia, SELC has nine offices throughout our six-state region of Virginia, Tennessee, North Carolina, South Carolina, Georgia and Alabama, including an office in Birmingham, Alabama.

STATEMENT OF REASONS

In January of 2004, the U.S. Forest Service issued its Revised Land and Resource Management Plan for the National Forests in Alabama (hereinafter "Forest Plan" or "Plan,") which sets management standards and activities in the National Forests of the state for the next 10-15 years. One outcome of the Plan was that the Forest Service identified lands that would be administratively available for mineral development, including oil and gas activities, and consented to the lease of those lands by BLM. See Forest Plan at 1-2.

Were BLM to offer these leases for sale, the agency would violate the Federal Onshore Oil and Gas Leasing Reform Act, 30 U.S.C. § 181 *et seq.*; the National Environmental Policy Act, 42 U.S.C. §§ 4321 *et seq.* ("NEPA"); the Endangered Species Act, 16 U.S.C. §§ 1531 *et seq.* ("ESA"); and the National Forest Management Act, 16 U.S.C. §§ 1600 *et seq.* ("NFMA") because BLM and the Forest Service have, *inter alia*: (1) Failed to provide adequate information in violation of the Federal Onshore Oil and Gas Leasing Reform Act; (2) Failed to supplement its environmental analyses in violation of NEPA; (3) Failed to consider a reasonable range of alternatives in violation of NEPA; (4) Made an irretrievable commitment of resources in violation of NEPA; (5) Failed to properly consult and/or to reinstate consultation in violation of the ESA; and (6) Violated NFMA by failing to conform the lease sale to the Forest Plan. In addition, the agencies should delay the sale of the parcels until new rules, regulations and studies governing hydrofracking have been issued.

Accordingly, BLM should withdraw the parcels from the lease sale until the agencies have fully complied with federal law.

I. BLM and the Forest Service Have Failed to Provide Adequate Information to the Public Regarding This Lease Sale in Violation of the Federal Onshore Oil and Gas Leasing Reform Act.

BLM and the Forest Service have not provided sufficient information to the public regarding the parcels involved in this lease sale. The Competitive Lease Sale Notice fails to provide the public with an understanding of where the Alabama parcels are actually located. For example, there were no maps provided to the public of the Alabama parcels, and the description of lands offered in the lease sale notice is not sufficiently clear to inform the general public about the actual location of the parcels, given the difficulties understanding and interpreting the descriptions given by township, range and section. While the Forest Service did provide maps of the parcels in the Talladega and Shoal Creek Divisions to the protesting parties, the agency did not provide maps of the Oakmulgee Division. In addition, based upon information and belief, *none* of this information has been made readily available to the public as a whole. As a result, it is extremely difficult for concerned members of the public to understand the impacts of oil and gas leasing and development here and how it would affect them, and to enable them exercise their right to file a well-informed, meaningful protest founded on information about potential impacts, such as the proximity of the parcels to natural gas shale plays, to endangered and threatened species and their critical habitat, to sources of drinking water and other important aquatic resources, to important wildlife habitat, or to trails and recreation areas. In addition, it is difficult to determine whether certain parcels are located in management prescription areas that would necessitate additional stipulations and lease terms in order to conform to the Forest Plan's management direction.

This failure to map and adequately describe the location of the parcels constitutes a potential violation of the Federal Onshore Oil and Gas Leasing Reform Act, which requires that at least 45 days before offering lands for lease, the Secretary shall provide notice of the proposed action. *See* 30 U.S.C. § 226(f). "Such notice shall include the terms or modified lease terms and maps or a narrative description of the affected lands. Where the inclusion of maps in such notice is not practicable, maps of the affected lands shall be made available to the public for review. Such maps shall show the location of all lands to be leased, and of all leases already issued in the general area." *Id.* BLM must provide maps of the parcels to the public, along with maps of already issued lease parcels, in order to comply with this Act.

II. BLM and the Forest Service Will Violate NEPA If These Parcels are Included in the Lease Sale.

a. BLM and the Forest Service Must Supplement the 2004 FEIS to Assess the Impacts of New Information.

To comply with NEPA, an Environmental Impact Statement (EIS) must provide a "full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. The agency must take a "hard look" at the environmental consequences of its proposed action. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); *Strycker's Bay Neighborhood Council v. Karlen*, 444 U.S. 223, 231 (1980).

BLM's decision to offer the parcels for sale and the Forest Service's consent to lease these parcels in the Forest Plan are major federal actions requiring the preparation of an EIS. NEPA makes clear that an EIS must be prepared for any "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C); 40 C.F.R. § 1502.3. The Forest Plan made two decisions related to federal oil and gas leasing: (1) the decision to make available lands for future leasing under 36 C.F.R. § 228.102(d); and (2) the decision to consent to BLM's lease of those available lands, under 36 C.F.R. § 228.102(e). *See* 2004 FEIS at 3-61.

The Forest Plan, completed in 2004, was appealed in part due to its consent to leasing of available lands without a site-specific analysis being conducted as part of its EIS. This fact in and of itself renders the 2004 FEIS inadequate. Regardless of its original adequacy, however, as this protest letter will discuss, since 2004 the situation has changed significantly and significant new information has emerged that make the environmental analyses in the FEIS insufficient to support a decision to lease the parcels for oil and gas development.

Where significant new circumstances or information arise *after* the completion of an EIS, NEPA requires the preparation of a supplemental EIS. *See* 40 C.F.R. § 1502.9(c)(1). An agency must prepare a supplemental EIS ("SEIS") when "[t]here are significant new

circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." *Id.* § 1502.9(c)(1)(ii). "The standard for determining when an SEIS is required is essentially the same as the standard for determining when an EIS is required." *Sierra Club v. U.S. Army Corps of Eng'rs*, 295 F.3d 1209, 1215-16 (11th Cir. 2002) (quotation marks and citation omitted). A supplemental EIS must be prepared if there remains major federal action to occur, and if the new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered. *Sierra Club v. Bosworth*, 465 F. Supp. 2d 931, 937 (N.D. Cal. 2006) (citations and quotations omitted) (enjoining four timber projects while the Forest Service prepares a supplemental EIS to address new information). The agency must "take a 'hard look' at the new information to assess whether supplementation might be necessary." *Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 72-73 (2004). Whether new circumstances are significant depends on a number of factors, including "[t]he degree to which the proposed action affects public health or safety," "[u]nique characteristics of the geographic area," such as proximity to historic or cultural resources, park lands, wild and scenic rivers, or ecologically critical areas, "[t]he degree to which the effects on the quality of the human environment are likely to be highly controversial," "[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks," "[t]he degree to which the action . . . may cause loss or destruction" of significant resources, "[t]he degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act," and "[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b). These factors are implicated here, as is discussed further below, warranting supplementation under NEPA.

As discussed below, the emergence of commercially economical shale gas drilling is exactly the sort of new circumstance that requires supplementation under NEPA. The Forest Service did not consider impacts from potentially hundreds of producing wells in Alabama's National Forests, and did not assess impacts from unconventional oil and gas development and high volume hydraulic fracturing. The agencies must correct these flaws by conducting a supplemental NEPA analysis.

i. An Overview of Environmental Impacts from Oil and Gas Drilling Analyzed in the 2004 FEIS.

BLM and the Forest Service rely on the NEPA analysis contained in the 2004 FEIS in approving oil and gas leases on the parcels. While the 2004 FEIS provided a brief discussion of the potential impacts of oil and gas development as they were understood in 2004, this analysis did not and likely could not have anticipated the significant changes in the oil and natural gas industry that have emerged in the ensuing years. Therefore, BLM's and the Forest Service's reliance on these documents is misplaced and cannot comply with NEPA.

In the ten years prior to 2004, there had been no wells drilled on either the Bankhead or the Talladega Forests, and only 11 wells (about one per year) on the Conecuh Forest. 2004 FEIS at 3-66. At the time that the Forest Plan was enacted, the only active leases for oil and gas activities were 46 leases in the Conecuh National Forest; there were no active oil and gas leases in the Bankhead, Talladega or Tuskegee National Forests. *See id.* at 3-57. Of those oil and gas leases in the Conecuh National Forest, only 3 leases were commercially viable, containing a total of 4 productive wells. *Id.* at 3-64. In the 2004 FEIS, based in part on historical low interest in drilling in these areas, the Forest Service projected similarly low mineral development in Alabama's National Forests over the next ten years. Talladega National Forest, where the majority of the parcels are located, was rated by the 2004 FEIS as "Low Potential," which is described as:

"The geologic, geochemical, and geophysical characteristics do not indicate a favorable environment for the accumulation of oil and/or gas resources. Specific indications that one or more of the following may not be present: source rock, thermal maturation, or reservoir strata possessing permeability and/or porosity, and traps."

2004 FEIS at 3-66.

The Forest Service predicted that, over the next ten years, only one oil/gas well would be drilled in Bankhead Forest, one in the Talladega Forest, and 10 (one per year) in the Conecuh Forest. *Id.* It was based on this assumption that the Forest Service conducted its NEPA analysis, which was aimed at disclosing environmental impacts "associated with *this projected activity*." *Id.* (emphasis added).

The 2004 FEIS analyzed what was at the time the "standard approach" to drilling, which was to "drill vertical holes from a single drill pad down to the target formation" into known producing zones, which "lie relatively shallow." *Id.* at 3-67. These drilling operations typically involve the clearing of one to two acres for the well pad; a reserve pit about five feet deep that is lined with bentonite clay; and constructed roads that average 1/3 of a mile. *Id.* In total, a drilling operation would be expected to disturb three acres in total – 1 for the access road and 2 for the drill pad. *Id.* at 3-68. Wells are typically drilled in 7 to 30 days with a rotary drilling rig that uses mud and water, which is normally pumped from a well drilled on the site. *Id.* at 3-67. Once a well begins to produce, drilling pads are reduced to 10,000 square feet, and the oil or gas is either stored in tanks on site or connected via a pipeline and transported off site. *Id.* at 3-68.

The Forest Service predicted that only 20 percent of the total wells drilled on the Alabama National Forests would produce commercial amounts of oil or gas. Based on that prediction, of the 12 wells projected to be drilled from 2004-2014, only 2 to 3 wells were predicted to produce oil or gas. *Id.* This would lead to a total annual disturbance of about six acres throughout the entire Alabama National Forests. *Id.* And on the Talladega National

Forest, the FEIS estimated that, during the entire 10-15 year lifespan of this forest plan,³ only three to six acres (one well every 10 years) of the Forest would be disturbed.

Based on these minimal predicted development activities, the FEIS briefly described potential environmental impacts on air quality, water quality, soil disturbance, vegetation, listed species, and recreational activities. See 2004 FEIS at 3-69 to 3-70. In assessing the cumulative effects of the 12 wells estimated to be drilled over the next ten years, the 2004 FEIS predicted the following impacts: 1) an average surface disturbance over the term of the Forest Plan of .5 acres per year; 2) "negligible" impacts to air quality, water quality, aquatic habitat, wildlife, threatened and endangered species, soils, and visuals; and 3) some positive economic impacts resulting from drilling activities for local economies. *Id.* at 3-74.

ii. The 2004 FEIS Fails to Analyze the Impacts of Unconventional Oil and Gas Extraction and High Volume Hydraulic Fracturing on National Forest Land.

This cursory analysis must now be supplemented in light of changed circumstances. One particularly significant change since the 2004 EIS is the development and widespread increase in the use of unconventional oil and gas extraction techniques, especially those using hydraulic fracturing, also known as *hydrofracking*. Hydraulic fracturing, which was not widely used in the United States until around 2005, involves the extraction of natural gas from shale formations deep below the surface, and is one of the fastest growing trends in American on-shore domestic oil and gas production.⁴ Large scale production of shale gas has become widespread in the past several years due to these advances in horizontal drilling and hydraulic fracturing, which have significantly improved the industry's ability to produce natural gas in shale basins around the country, including the Barnett, Hayesville, Fayetteville, Woodford, Utica, and Marcellus shale formations.⁵ In 2009, 63 billion cubic meters of gas were produced from deep shale formations. In 2012, this production doubled to 137.8 billion cubic meters, and the U.S. Energy Information

³ The National Forest Management Act provides that forest plans shall be revised at least every 15 years or anytime the Secretary finds conditions in a unit have significantly changed. 16 U.S.C. § 1604(f)(5).

⁴ Ground Water Protection Council and ALL Consulting, *Modern Shale Gas Development in the United States: A Primer*. Prepared for U.S. Dep't of Energy, Office of Fossil Energy and National Energy Technology Laboratory (Apr. 2009), available at http://www.rrc.state.tx.us/docshale/Shale_Gas_Primer_2009.pdf. See also Energy Information Administration, *Review of Emerging Resources: U.S. Shale Gas and Shale Oil Plays* (July 2011), available at <http://www.eia.gov/analysis/studies/usshalegas/pdf/usshaleplays.pdf>; Secretary of Energy Advisory Board Shale Gas Production Subcommittee, 90-Day Report (Aug. 18, 2011), available at http://www.shalegas.energy.gov/resources/081811_90_day_report_final.pdf (noting that "it was only around 2008 that the significance of shale gas began to be widely recognized").

⁵ Robert B. Jackson *et al.*, Duke University, *Research and Policy Recommendations for Hydraulic Fracturing and Shale-Gas Extraction*, Center on Global Change (2011), available at <http://www.nicholas.duke.edu/cgc/HydraulicFracturingWhitepaper2011.pdf>.

Administration projects that by 2035, production will increase to 340 billion cubic meters per year.⁶

This process of natural gas drilling differs significantly from the conventional oil and gas drilling that was analyzed in the 2004 FEIS. Hydrofracking typically involves millions of gallons of fluid that are pumped into a well at high pressure to create fractures in the shale rock.⁷ This pressure exceeds the rock strength, and the fluid enlarges fractures in the rock, allowing gas to flow from the fractures and up into the wellbore.⁸ Wells may extend to depths greater than 8000 feet, and horizontal drilling may extend several thousands of feet away from the location of the drill pad on the surface.⁹

Due to the fact that production from this natural gas shale was not in common use in 2004, the potential for high volume hydrofracking was not considered in the Forest Plan or the 2004 EIS. As a result, the 2004 EIS fails to analyze the impacts of this type of drilling activity, including potentially significant impacts on surface- and ground-water quality, aquatic habitat, air quality, wildlife habitat, listed species, recreation, and scenic values.

The 2004 FEIS also must be supplemented to address the State of Alabama's regulation of hydrofracking or lack thereof. Alabama regulates hydrofracking through its general permitting process, but those rules apply only to hydrofracking in coal bed methane formations, not in shale formations.¹⁰ The agencies should consider how potentially lax regulations on the state level may impact the demand for and oversight of drilling on the National Forests.

Not only was the 2004 FEIS unable to consider the effects of new shale gas drilling using horizontal drilling and high-volume hydrofracking, but the FEIS also assumed there would be low interest in oil and gas development on the Talladega National Forest. This already has been proven incorrect by BLM's lease, in 2007, of almost 75,700 acres on the Oakmulgee Division of the Talladega National Forest. Now if this proposed lease sale goes forward, a total of about 118,738 acres of the Talladega would be under lease – 30% of the Talladega National Forest. Based on the FEIS statement that historically wells in Alabama are drilled on 40-640 acre spacing (which may or may not still be accurate with the advent of horizontal drilling and hydrofracking), complete development of the leased parcels could amount to several hundred to

⁶ U.S. Energy Information Administration. Annual Energy Outlook 2011 with Projections to 2035 (Dec 2010), available at <http://www.eia.doe.gov/oiaf/aeo/electricity.html>.

⁷ Jackson *et al.*, *supra* at note 5, at 1.

⁸ U.S. Env'tl. Prot. Agency, Office of Research and Development, *Hydraulic Fracturing Research Study* (June 2010), available at <http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf>.

⁹ *Id.*

¹⁰ See Hannah Wiseman, *Untested waters: the rise of hydraulic fracturing in oil and gas production and the need to revisit regulation*, 20 *Fordham Env'tl. L. Rev.* 115, 143-44 (2009). In 2007, Alabama exempted coal bed fracking from regulation under its underground injection control program, but also provided regulatory requirements that must be met before a coal bed fracking operation can obtain a permit under the state's general permitting regime. See *In Re: Order No. 2007-133, Docket No. 1-31-07-12, State Oil and Gas Board of Alabama* (Sept. 7, 2007). Notably, these regulations only apply to coal bed fracking, not to shale operations – there are no similar requirements governing shale. See Ala. Admin. Code r. 400-3-8-.03.

almost three thousand wells, exponentially exceeding the estimate of one well per decade on the Talladega National Forest upon which the FEIS and plan were based. The FEIS must be supplemented so that the effects of the new, greatly increased level of potential oil and gas development can be analyzed and disclosed, and so that the Forest Service can reconsider the Forest Plan's decision in that light.

Many of the parcels on the Talladega National Forest were included in a prior planned oil and gas lease sale in 2009. When those parcels were protested by Wild South, BLM "deferred" them "for further review and consideration." See BLM, Eastern States, Information Notice re Competitive Lease Sale scheduled for Dec. 3, 2009 (Nov. 24, 2009). Yet, to the knowledge of the protesting parties, no such further review and consideration ever occurred, at least not in documents provided for public notice and comment. Such further review and consideration is still warranted and necessary.

1. IMPACTS OF FRACKING ON WATER RESOURCES

Hydrofracking entails the use of large quantities of water. Estimates vary depending on the size and depth of the well, but two to four million gallons of water per well is an often-used figure, and water use can be as high as five million gallons or more.¹¹ In addition, wells are often "fracked" multiple times in order to maximize the resources extracted. The vast amount of water needed to drill these wells must come from somewhere, likely either from the streams and rivers of the National Forests or from local groundwater resources. Water withdrawals in other parts of the country for hydrofracking have had significant effects on lakes, streams, rivers and reservoirs, impacting aquatic life and local residents.¹² The lowering of water levels can also impact water quality, depleting aquifers and causing chemical changes in the water, affecting solubility and mobility; stimulating bacterial growth; and lowering surface water resources, causing changes in flow depth, velocity, and temperature and reducing the dilution effect on contaminants.¹³ The 2004 FEIS fails to analyze the local area-specific impacts of such water withdrawals on the National Forests or on the nearby communities that rely on these forests as drinking water sources, making it unclear how large volume water withdrawals may impact this region.

These huge volumes of water are mixed with large amounts of chemicals and sand and then forced under high pressure down a well in order to blow out underground seams and

¹¹ See U.S. Envtl. Prot. Agency, Office of Research and Development, *Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources*, pp. 19 (Feb. 7, 2011), available at http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/upload/HFStudyPlanDraft_SAB_020711-08.pdf. See also 2011 Draft Environmental Impact Statement for the Revised Land and Resource Management Plan, George Washington National Forest (Apr. 2011) at 3-311, available at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5297825.pdf.

¹² Donald Gilliland, *The Patriot-News, SRBC suspends water withdrawal permits for drilling due to low stream flows* (July 19, 2011), available at http://www.pennlive.com/midstate/index.ssf/2011/07/srbc_suspends_water_withdrawal.html.

¹³ *Id.* at 21.

increase the volume of gas extracted. The volume of chemicals can differ, but for a well that uses 3 million gallons of fracturing fluids, there will potentially be up to 60,000 gallons of chemicals used.¹⁴ These chemicals are typically stored in tanks on-site and blended with water and proppants prior to injection.¹⁵ Unfortunately, due to a loophole in the federal Safe Drinking Water Act, the exact chemicals, amounts, and combinations are not required to be disclosed, despite reports that many of these chemicals are harmful and potentially cancer-causing. For example, the EPA has found that chronic toxicity has been associated with some identified "fracking" chemicals, such as ethylene glycol, glutaraldehyde, and n,n-dimethyl formamide.¹⁶

After the fracturing event, the pressure is decreased and the direction of fluid flow is reversed, allowing the fracturing fluid and naturally occurring substances to return to the surface.¹⁷ These returning fluids, known as *flowback* or *process* wastewater, come back highly contaminated with heavy metals, carcinogens, and naturally occurring radioactive materials.¹⁸ These have been known to include brine, mercury, lead, arsenic, radium, uranium, and volatile and semi-volatile organic compounds.¹⁹

This flowback water, which comprise as much as 60-80 percent of the fracturing fluid injected into the well, can be contaminated with tens of thousands of pounds of chemicals, salt, and sand, posing difficulties for disposal.²⁰ Initially, flowback fluids can amount to as much as 100,000 gallons per day for several days, which is generally stored on-site in storage tanks and waste impoundment pits prior to treatment or disposal.²¹ The lease sale stipulations do not appear to regulate the storage of these fluids. One method of disposal is to discharge water into surface waters after treatment at a wastewater treatment facility. However, flowback water can pose challenges for treatment facilities that are generally unable to remove radioactive and other harmful materials found deep underground, as well as large amounts of sodium, chloride and bromide.²² As an alternative, flowback water is sometimes disposed through land application,

¹⁴ See Drinking Water Study Draft Plan, *supra* at note 11, at 24.

¹⁵ *Id.*

¹⁶ *Id.* at 25.

¹⁷ *Id.* at 35.

¹⁸ For example, the West Virginia Department of Environmental Protection found arsenic, lead and hexavalent chromium in wastewaters. See Letter from West Virginia Department of Environmental Protection to William Goodwin, Superintendent, Clarksburg Sanitary Board (July 23, 2009). New York State's Department of Environmental Conservation has reported levels of radium 226 in flowback water from the Marcellus Shale in amounts over 250 times the limit for safe drinking water. See N.Y. Dep't of Env'tl. Conservation, Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program at p. 13 (2009), available at <http://ftp.dec.state.ny.us/dmn/download/OGdSGEISFull.pdf>. The known carcinogen benzene has also been found in flowback waters from Pennsylvania and West Virginia at average concentrations nearly 100 times the maximum acceptable contaminant levels. *Id.* at 5-104.

¹⁹ See Drinking Water Draft Plan, *supra* at note 11, at 30.

²⁰ See *Hydraulic Fracturing Research Study*, *supra* at note 8. See also George Washington DEIS, *supra* at note 11, at 3-336.

²¹ See Drinking Water Study Draft Plan, *supra* at note 11, at 36.

²² See Ian Urbina, N.Y. Times, *Regulation Lax As Gas Wells' Tainted Water Hits Rivers* (Feb. 26, 2011), at A1 ("Yet sewage treatment plant operators say they are far less capable of removing radioactive contaminants than most other toxic substances. Indeed, most of these facilities cannot remove enough of the radioactive material to meet

which involves spraying of the wastewater onto the forest floor. This method has been known to kill trees and foliage in the area, and deposit high levels of chloride, calcium and sodium in the soil.²³ Lastly, flowback water may be returned underground using a permitted underground injection well.²⁴

It is unclear what the potential impacts would be to Alabama's National Forests from releases of fracturing fluids on water resources through accidental spills, land application, surface water discharges and groundwater contamination, or whether such releases could violate state and federal water quality standards. The 2004 FEIS does not assess the ability of local wastewater treatment facilities to treat flowback water or analyze land application's impacts on the parcels. Nor do the lease stipulations require disclosure of chemicals, limit land application, or speak to whether flowback water can be discharged into surface waters of the National Forests or injected into underground wells. Concerningly, several of the parcels are located adjacent to or in the watershed of streams that fall under the State of Alabama's special water use designations, which subjects them to heightened water quality standards. This includes a Public Water Supply designation in Terrapin Creek; Fish and Wildlife designations in Cane Creek, Cheaha Creek, Choccolocco Creek, Shoal Creek and Terrapin Creek; and Swimming designations in Cheaha Creek and Shoal Creek. *See* 2004 FEIS at 3-28 – 3-29. Further, the Cahaba River and Hatchet Creek are designated as Outstanding Alabama Waters. The 2004 FEIS must be supplemented to assess hydrofracking's impact on these resources.

Those fracturing fluids that remain (or are later injected) underground have the potential to impact groundwater resources. For example, there have been numerous reports from homeowners of contamination of drinking water wells in areas of extensive shale gas drilling.²⁵ These fluids also have the potential to migrate into aquifers, as appears to be the case in Pavilion, Wyoming, where EPA has made a preliminary determination that hydraulic fracturing fluids

federal drinking-water standards before discharging the wastewater into rivers, sometimes just miles upstream from drinking-water intake plants.") It is unclear whether local wastewater treatment facilities in the vicinity of Alabama's National Forests have the capacity to treat flowback waters, since this potential impact was not analyzed in the 2004 FEIS.

²³ *See Adams et al., U.S.D.A., Effects of Development of a Natural Gas Well and Associated Pipeline on the Natural and Scientific Resources of the Fernow Experimental Forest* (June 2010), available at http://www.nrs.fs.fed.us/pubs/etr/etr_nrs76.pdf. *See also* Nicholas Kusnetz, ProPublica, *Anatomy of a Gas Well: What Happened When a Well Was Drilled in a National Forest* (Feb. 4, 2011), available at <http://www.propublica.org/article/anatomy-of-a-gas-well-what-happened-when-a-well-was-drilled-in-a-national-f>.

²⁴ *See* Hydraulic Fracturing Study, *supra* at note 8. A new study performed by scientists at the U.S. Geological Survey concluded that the increased rate of earthquakes in the mid-continental U.S. is almost certainly manmade, and potentially is linked to oil and gas extraction, particularly to deep waste disposal injection wells. *See* W.L. Ellsworth, US Geological Survey, *et al., Abstract: Are Seismicity Rate Changes in the Midcontinent Natural or Manmade?*, to be presented at Seismological Society of America 2012 Annual Meeting, available at <http://www.seismosoc.org/meetings/2012/app/#12-137> (April 2012).

²⁵ *See* Jackson *et al., supra* at note 5, at 2.

have contaminated groundwater.²⁶ Contamination of groundwater may also originate from spills or leaks of fracturing fluids at the surface.

Gas may also migrate up through fractures in the overlying rock layers into groundwater. This shale gas is typically comprised of over 90 percent methane.²⁷ This form of methane contamination of drinking water wells is another clear and well documented potential risk of hydrofracking, as demonstrated by a recent Duke University study. The study found that methane concentrations were on average 17 times higher in drinking water wells located near natural gas drilling and hydrofracking sites in Pennsylvania and New York than in drinking water wells not located within 1 km of a gas well.²⁸ The average concentration in gas areas was high enough to be a potential explosion hazard. This migration can occur through corroded well casings, failures in the integrity of cement surrounding the casing, or even potentially through direct movement of methane or flowback water upwards from underground following hydraulic fracturing.²⁹ State environmental agencies also have reported incidents of drinking water contamination resulting from methane leaks from fracked gas wells.³⁰ The 2004 FEIS must be supplemented to include an analysis of the impacts on nearby drinking water resources, including possible contamination of aquifers, private drinking wells, groundwater and surface waters, from such drilling practices.

The re-evaluation of oil and gas development's impacts on aquatic resources is particularly critical due to the important National Forest resources that stand to be harmed by these activities. Although the National Forests encompass less than 3% of Alabama's land, over 40% of the state's freshwater aquatic species are represented therein. See 2004 FEIS at 3-167. In addition, compared to other National Forests, Alabama's forests rank first in the nation for diversity of mollusks, fish, and turtles, and second in diversity of crayfish and amphibians. *Id.* Among the National Forests of Alabama, the areas where parcels are located also appear to be areas of extremely high species diversity. For example, the Oakmulgee Division of the

²⁶ Natural Resources Defense Council, *Comments on Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program* (Dec. 31, 2009) (submitted to the New York State DEC); see also U.S. Envtl. Prot. Agency, Office of Research and Development, *Draft Investigation of Groundwater Contamination near Pavillon, Wyoming* (2011), available at www.epa.gov/region8/superfund/wy/EPA_ReportOnPavillon_Dec-8-2011.pdf.

²⁷ See Jackson *et al.*, *supra* at note 5, at 2.

²⁸ Stephen G. Osborn, *et al.*, *Methane Contamination of Drinking Water Accompanying Gas-Well Drilling and Hydraulic Fracturing*, 108 PNAS 8172 (2011), available at <http://www.nicholas.duke.edu/cgc/pnas2011.pdf>.

²⁹ Pennsylvania State College of Agricultural Sciences Cooperative Extension, *Water Facts 28: Gas Well Drilling and Your Private Water Supply* at 2 (Mar. 2010), available at http://www.essj.psu.edu/news_events/EarthTalks/2009Spring/materials2009spt/gasdrilling.pdf.

³⁰ For example, the Pennsylvania DEP has brought a series of enforcement actions against Cabot Oil & Gas for drinking water well contamination. See Abraham Lustgarten, ProPublica, *Cabot Oil & Gas's Marcellus Drilling to Slow After PA Environment Officials Order Wells Closed* (Apr. 16, 2010), available at <http://www.propublica.org/article/cabotoil-and-gas-ordered-to-shut-down-problem-wells-and-pay-massive-fine-a>. See also Ohio Dept. of Natural Resources, *Report on the Investigation of the Natural Gas Invasion of Aquifers in Bainbridge Township of Geauga County, Ohio* (2008), available at http://s3.amazonaws.com/propublica/assets/natural_gas/ohio_methane_report_080901.pdf.

Talladega National Forest ranks first for aquatic biodiversity, and the Talladega Division of the Talladega National Forest ranks second. *Id.* In addition, exceptional watersheds for aquatic diversity and high numbers of listed species include the Cahaba, Lower Conecuh, Middle Choccolocco, Upper Choccolocco, and Five Runs. *Id.* The 2004 FEIS also notes that 52 aquatic species may be at high risk due to habitat impairment within the watersheds partially on the Talladega National Forest, potentially warranting that forest's designation as the highest aquatic conservation priority in Alabama. 2004 FEIS at 3-176.

Based upon information and belief, leasing many of the proposed parcels is likely to harm these important aquatic resources. For example, in the Talladega Division of the Talladega National Forest, 2,500 to 3,000 acres of proposed parcels, located in Township 14S, Range 11E, flow into the Cane and Muscadine Creeks of the Tallapoosa River watershed, and the remaining parcels flow into the Coosa River watershed. These two watersheds, the Tallapoosa River and the Coosa River, are among fifteen watersheds that contain the highest number of endemic aquatic species of all Alabama's National Forests, and the presence of sensitive and threatened and endangered species gives these watersheds a high overall vulnerability rating. See Forest Plan at 4-17. On the Oakmulgee Division, most if not all of the approximately 15,000 acres to be leased are in the watershed of the renowned Cahaba River. Many of these parcels are in the watersheds of the Cahaba tributaries, the Oakmulgee and Little Oakmulgee Creeks. The Oakmulgee Creek supports at least one federally listed species, the ovate clubshell.³¹

In addition, some parcels located in Township 15S, Range 9E, Section 12 are adjacent to Whitesides Mill Lake, also known as the Sam Hamner Reservoir. Although as of 2010 no water was being taken from the Reservoir, it is managed for water supply by the City of Anniston and is included in the City's Source Water Protection Plan and Water Quality Report.³² Oil and gas production on those parcels, which are directly located on the shoreline of the lake, could have potentially significant impacts on the quality and quantity of drinking water available for Anniston and other municipalities that rely on this water source, such as Fort McClellan, Anniston Army Depot, parts of Oxford, Blue Mountain, Jacksonville, the Calhoun County Water and Fire Protection Authority, Hobson City, and the City of Weaver. Anniston's water supply is a source of drinking water for over 66,000 people.

In particular, it appears that many of these parcels are in the Choccolocco Creek watershed, especially in the watershed of its tributary Cheaha Creek, as well as some in the

³¹ Stuart W. McGregor, Geological Survey of Alabama, Water Investigations Program, and Jeffrey T. Garner, Alabama Dept. of Conservation and Natural Resources, Div. of Wildlife and Freshwater Fisheries, *Results of Qualitative Sampling for Protected Mussel Species at Selected Stations in the Cahaba River System, Alabama*, Open-File Report 0524, at 10 (2005), available at www.gsa.state.al.us/gsa/eco/pdf/OFR_0524.pdf.

³² See Anniston Water Works & Sewer Board website, describing the Reservoir as one of the area's "most outstanding surface water reservoirs," available at <http://www.awwsb.org/Default.asp?ID=2&pg=About+Us>; see also Anniston Water Works and Sewer Board, *Water Quality Report for Period Ending December 2010* at 4 (2010), available at [http://www.awwsb.org/Sites/Anniston Water Works/Documents/Main/2010%20Water%20Quality%20Report.pdf](http://www.awwsb.org/Sites/Anniston%20Water%20Works/Documents/Main/2010%20Water%20Quality%20Report.pdf).

watershed of its tributary Shoal Creek. Several important aquatic species are found in Choccolocco Creek, including the blue shiner (listed as threatened and a Conservation Target Species of SAFC/TNC,) the holiday darter (endemic and a Conservation Target Species,) the Coosa darter (endemic,) the coldwater darter (endemic, a Conservation Target Species, and considered to be critically imperiled by The Nature Conservancy,) the Coosa shiner (endemic,) the bronze darter (endemic,) the greensaddle crayfish (endemic,) the fine-lined pocketbook (listed as threatened, endemic, and a Conservation Target Species,) the Tennessee heelsplitter (candidate for listing,) the Alabama moccasinshell (listed as threatened,) the Southern pigtoe (a Conservation Target Species considered critically imperiled by TNC, which has now been listed) and the Coosa creekshell (endemic).³³ According to a 1999 report by the Southern Appalachian Forest Coalition and the Pacific Rivers Council, "of the small streams within the Coosa drainage, Choccolocco Creek is probably the most significant in terms of species diversity and presence of imperiled species."³⁴ That report identified the Choccolocco Creek watershed as one of 15 Priority Aquatic Diversity Areas in the entire Southern Appalachian region. There are 6 miles of bank length of the Choccolocco Creek within Talladega National Forest, and 120 square miles of National Forest land within its watershed. *Id.* at 14. Based on this, the report finds that "[s]ystems lands on the Talladega NF should receive particular attention." *Id.* at 16.

The report also identified the Shoal Creek watershed (a Choccolocco tributary) as one of 22 smaller Critical Refugia for aquatic diversity on national forest lands in the Southern Appalachians, as well as the best example of a small warmwater stream in the entire Mobile Bay/Coosa drainage.³⁵ Shoal Creek holds three of the four imperiled mussel species and four critically imperiled snail species known from the Alabama portion of the Coosa system, and there is potential for other candidate species to be present there as well. *Id.* at 21. Indeed, the 1999 report notes that "virtually all the upper Coosa tributary systems in Alabama ... deserve attention as conservation priorities." *Id.* at 11.

Over 5,000 acres of the parcels in Township 14S, Range 11E feed the south fork watershed of Terrapin Creek, which also is considered a critical aquatic refuge for some fish and mussel species.

The 2004 FEIS did not examine the full lifecycle of the high volume hydrofracking process, from the impact on water sources at the outset to the potential contamination from "fracking" fluids used to extract natural gas to the proper treatment and disposal of these fluids at the end of the process. In fact, the potential for high-volume hydrofracking is nowhere mentioned in the 2004 FEIS. Without supplementing the 2004 FEIS, the permitting of high volume hydrofracking by BLM violates NEPA.

³³ William O. McLarney, The Southern Appalachian Forest Coalition and Pacific Rivers Council, *Protection of Aquatic Biodiversity in the Southern Appalachian National Forests and their Watersheds* at 16, 7-9, included with this protest letter for ease of reference as Attachment A.

³⁴ *Id.*

³⁵ *Id.* at 21.

2. SURFACE IMPACTS OF FRACKING

During site preparation for a shale well, an area must be cleared to provide space for one or more wellheads; pits for holding water, used drilling fluids, and other materials; and space for trucks and other large equipment. The average size of a single high-volume hydrofracking operation is significantly larger than that of a conventional drill pad. The 2004 FEIS estimated that one to two acres per well would be cleared for the drill pad. *See* 2004 FEIS at 3-67. In contrast, in the Marcellus Shale gas play, an average 3.1 acres is cleared for the drill pad, another 5.7 acres is cleared for associated infrastructure (roads, pipelines, water impoundments, etc.), and another 21.2 acres is disturbed due to indirect forest impacts.³⁶ This directly destroys and indirectly degrades forests and forest habitat, and this level of ground disturbance can increase sedimentation in streams, such as those discussed above, adversely affecting water quality.

Similarly, truck traffic associated with horizontal natural gas wells is significantly heavier than traffic associated with conventional drilling operations. For example, the National Park Service estimates that in Marcellus Shale production areas, between 300 and 1,300 truck trips would occur per well.³⁷ Other documents have estimated that between 2,920 and 4,445 truck trips are necessary for a three well multi-well pad.³⁸ Narrow dirt roads may need to be widened or paved to accommodate this high volume of traffic, increasing surface impacts and stormwater runoff. Additionally, the increase in the number of truck trips required for each well also increases the risk of chemical transportation accidents.³⁹

Additionally, many horizontal hydrofracking operations use open storage pits to hold brine and flowback. These pits can have impacts on bird and bat species, which can mistake the pits for bodies of water.⁴⁰ These pits can also impact the environment from leaks and spills. For example, in Ohio, a fracturing flowback storage pit was cut with a track hoe in 2010, causing more than 1.5 million gallons of fluid to spill into the environment.⁴¹

The 2004 FEIS also failed to address the potential impacts of solids disposal. The total volume of drill cuttings from drilling a horizontal well may be one-third greater than for the conventional drilling well.⁴² This may necessitate the use of a larger reserve pit, and increases the amount of heavy metals and naturally occurring radioactive metals on the site.

³⁶ Neal Johnson *et al.*, *The Nature Conservancy, Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind* (Nov. 15, 2010) at 10, available at http://www.nature.org/media/pa/tnc_energy_analysis.pdf.

³⁷ *See* Drinking Water Draft Plan, *supra* at note 11, at 55.

³⁸ *See* George Washington DEIS, *supra* at note 11, at 3-338.

³⁹ *See* Drinking Water Draft Plan, *supra* at note 11, at 14.

⁴⁰ *See* U.S. Fish and Wildlife Service, Region 6, Envtl. Contaminants Program, *Reserve Pit Management: Risks to Migratory Birds*, at i (2009), available at <http://westernenergyalliance.org/wp-content/uploads/2009/09/Reserve-Pits.pdf>.

⁴¹ Ohio Dep't of Natural Resources, Notice of Violation No. 1278508985 (June 21, 2010).

⁴² *See* N.Y. D.E.C. Draft Supplemental GEIS, *supra* at note 18, at 6-63.

Prior to offering the parcels for lease, BLM and the Forest Service must supplement their NEPA analysis to consider the potential effects from all these surface impacts.

These surface impacts can cause severe harm to forest resources that have not been adequately considered. For example, several of the proposed parcels appear to be located in the Forest Plan's Longleaf Restoration management prescription area, such as those in Township 21S, Range 6E, and Township 14S, Range 11E. This prescription area calls for "natural appearing" landscape. *See* Forest Plan at 3-39. The leasing of these parcels could be detrimental to Longleaf restoration efforts due to, for example, the conversion of longleaf forest or potential longleaf restoration sites to gas development facilities, the fragmentation of longleaf or potential longleaf forests by such facilities, and harmful land application practices or spills of chemicals from trucks or storage areas. In addition, the oil and gas development permitted by this lease sale appears to be at odds with the efforts of the Forest Service and numerous federal, state and nongovernmental partners to promote range-wide restoration of Longleaf Pine through the America's Longleaf Restoration Initiative.⁴³ The Range-Wide Conservation Plan for the Longleaf Pine designates the Talladega area, anchored by the Talladega National Forest, as a Significant Landscape for longleaf restoration, which is "intended to focus conservation efforts to establish or maintain functional landscapes with adequate connectivity for large-area dependent species and complex matrices of natural communities." *Id.* at 21, 34. The Plan notes that both Significant Landscapes and smaller Significant Sites are "important to the conservation of the range of longleaf pine communities and species diversity." *Id.* at 21. The Talladega area is particularly important to longleaf restoration efforts since it is the only representative of the Southeastern Interior LLP Woodland Ecosystem Type, giving it unique value even among the other Significant Landscape areas. *Id.* at 30. Despite evidence that the Forest Service is heavily invested in the restoration of longleaf pine, for example, with its leadership in America's Longleaf Restoration Initiative, there is no evidence that the agencies have considered the effects or consistency of leasing and drilling in the Alabama National Forests on the longleaf pine.

3. IMPACTS OF FRACKING ON AIR QUALITY

As part of its 2004 NEPA analysis, the Forest Service also did not consider the air quality impacts of high volume hydrofracking, which are more severe than those related to conventional drilling. The EPA has reported that hydraulic fracturing of one well leads to emissions of 23 tons of volatile organic compounds (VOCs) – roughly 200 times more emissions than if the well was not hydraulically fractured.⁴⁴ VOCs are known to be highly toxic and also to contribute to

⁴³ *See* America's Longleaf, *Range-Wide Conservation Plan for Longleaf Pine* (2009), available at http://americaslongleaf.org/media/86/conservation_plan.pdf.

⁴⁴ U.S. Envtl. Prot. Agency, Proposed Rule, *Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews*, 76 Fed. Reg. 52,757 (Aug. 23, 2011).

ozone. In addition, fugitive methane emissions from shale have been shown to be at least 30 percent more than those from conventional gas operations.⁴⁵

In addition to the NEPA requirements to consider impacts on air quality, the agency must consider whether these potential emissions threaten the affected areas' compliance with the Clean Air Act. This is especially important for any Class 1 areas, such as the Sipsey Wilderness in the Bankhead National Forest in Alabama; Class 1 areas can only receive a small amount of pollution under the Act. *See* 2004 Forest Plan at 2-17.

BLM and the Forest Service must consider the potential for increases in air pollution connected to high volume hydrofracking prior to the issuance of leases for the Alabama parcels.

4. IMPACTS OF FRACKING ON WILDLIFE

Oil and gas drilling operations can impact wildlife by killing and harming animals that cannot leave habitats affected by construction of access roads, clearing and leveling of drill pad sites, or construction of pipelines and facilities. *See* 2004 FEIS at 3-69 (noting that “[v]egetation occupying the areas to be disturbed for road and pad will be uprooted and destroyed” and the “noise, lights, and activity of men and machines could disturb wildlife in the surrounding environs.”) Wildlife will certainly be displaced by these activities in greater numbers than had originally be predicted in the Forest Plan and its FEIS, due to the increased footprint of high volume drilling operations compared to conventional drilling and the greater interest in oil and gas development than projected. In addition, there are potential adverse impacts from the creation of forest edge from construction activities, with research demonstrating that measurable impacts often extend at least 330 feet into the forest area adjacent to the edge.⁴⁶ The 2004 FEIS must be supplemented to consider increased impacts to wildlife and their habitat from increased development should high volume hydrofracking occur on the parcels.

5. IMPACTS OF FRACKING ON RECREATION AND SCENERY

The Alabama National Forests in particular hold many varied opportunities for recreation, including the Bartram and Pinhoti National Recreation Trails, the Talladega Scenic Drive, and the Cheaha and Dugger Mountain Wilderness Areas. *See* Forest Plan at 2-55. One of the Forest Plan's goals is to provide “a spectrum of high quality, nature-based recreation settings and opportunities that reflect the unique and exceptional resources of the Forest.” *Id.* Another goal is to “[p]rotect and enhance the scenic and aesthetic values of the National Forest lands

⁴⁵ Robert W. Howarth, *et al.*, *Climactic Change, Methane and the greenhouse has footprint of natural gas from shale formations: A letter*, at Abstract (2011), available at <http://www.eeb.cornell.edu/howarth/Howarth%20et%20al%20%202011.pdf>; *see also* Robert W. Howarth, *et al.*, *Climactic Change, Venting and leaking of methane from shale gas development: Response to Cathles et al.* (Feb 2012), available at http://www.eeb.cornell.edu/howarth/Howarthetal2012_Final.pdf.

⁴⁶ *See* Johnson, *supra* at note 36.

through application of the Scenery Management System and assigned Scenic Integrity Objectives, which are supposed to govern all new projects in the forests. *Id.* at 2-60.

Unconventional oil and gas development using hydrofracking has the potential to result in significant impacts to these resources, impairing the Forest Service's ability to meet its recreational and scenic management prescription goals. By its very nature, oil and gas development is incompatible with the desired experience in semi-primitive recreation settings. The 2004 FEIS provided a minimal discussion of impacts from conventional drilling, noting that oil and gas drilling may cause "some adverse impact on recreational activities such as bird watching or hunting." *Id.* at 3-69. However, it notes that these impacts will be "short in duration and very localized in effect," and most visual impacts will be "subtle and easily screened from most viewsheds." *Id.* at 3-69, 3-70. These impacts are likely to be much more significant should high volume hydrofracking be permitted on the parcels, as discussed above. The 2004 FEIS should be supplemented to analyze the expected extent of potential impacts on trails and trail users from increased road and pipeline construction and the sights and sounds of round-the-clock, large-scale hydrofracking operations on and near recreational and scenic areas.

Concerningly, some parcels appear to be within or adjacent to areas that serve important recreation and scenic functions within the National Forests. For example, several parcels in Sections 25 and 35 of Township 18S, Range 7E are adjacent to the Cheaha Wilderness Area, which, according to *Alabama Mountain Treasures*, provides "spectacular wilderness views" and is "vital to the integrity of the Wilderness."⁴⁷ The Cheaha Wilderness Area is near Cheaha Mountain, which is one of the most popular recreation sites in Alabama. This Area's management prescription in the Forest Plan dictates that it is to be characterized by "unfragmented habitat" and should exhibit "little evidence of visitor use" and "minor evidence of primitive travelways." *See* Forest Plan at 4-20. It is unclear how the drilling of oil and gas wells adjacent to this wilderness area is compatible with the management prescriptions set for this important recreational area. Moreover, some of the parcels proposed for lease appear to extend slightly into the Wilderness area. We hope this appearance is not actually the case, but the BLM and Forest Service must ensure that no leases include Wilderness land.

Similarly, several sections (located in Township 14S, Range 11E as well as Township 18S, Range 7E) appear to be located in an area that has been designated Dispersed Recreation Prescription⁴⁸ under the Forest Plan. *See id.* at 3-32. Under this prescription, the area is supposed to sustain "a relatively high number of recreationists" and to "showcase high quality scenery maintained through low intensity, planned vegetation management activities." *Id.*

⁴⁷ Lamar Marshall and Ken Wills, *The Wilderness Society, Alabama's Mountain Treasures: The Unprotected Wildlands of the Bankhead and Talladega National Forests* at 27 (2003). Portions of this source are included with this protest letter for ease of reference as Attachment B.

⁴⁸ Most of the Oakmulgee District is allocated to forest plan prescriptions for Dispersed Recreation, Longleaf Pine Restoration, and Red-Cockaded Woodpecker habitat, so the impacts to those prescriptions and their resources discussed here likely apply to many of the Oakmulgee parcels as well.

Wildlife viewing is "an important component" of recreation in this area. *Id.* The parcels in Township 14S, Range 11E also fall within the *Alabama Mountain Treasures'* proposed Shoal Valley Scenic Area, which is "heavily used for recreation."⁴⁹

The parcels in Township 18S, Range 7E are of particular concern, as these are located within the Dispersed Recreation prescription adjacent to the Cheaha Wilderness Area. Proposed lease parcels here contain Chinnabee Lake and various campsites and trails, including the Chinnabee Silent Trail, which was built in the early 1970s by members of a Boy Scout troop who were students at the Alabama Institute for the Deaf and Blind.⁵⁰ These parcels also are located within the proposed Cheaha Creek Scenic Area identified in *Alabama Mountain Treasures*. The proposed Cheaha Creek Scenic Area "includes some of the best waterfalls in the Talladega Mountain range" and "contains fabulous scenic views and some of the best recreational opportunities within the national forest."⁵¹ Proposed lease parcels contain or are very near Cheaha Falls. The lease parcels in this area would cover most of the National Forest land in the Cheaha Creek watershed.

In addition, many of these parcels in the Cheaha Creek area are within the viewshed of the Talladega Scenic Byway, which is within the Forest Plan's Scenic Byway Corridor management prescription 7.A. Among other standards, Scenic Byway Corridors have a High scenic integrity objective. The Forest Plan states that any oil and gas leases "will be issued with a Controlled Surface Use stipulation." Forest Plan at 3-25. Further, the Forest Plan notes that "[m]ineral material authorizations with conditions to protect the area may be permitted." *Id.* The Plan does not specify what these conditions would be, or how stipulations would be sufficient to ensure that the scenery-related goals of the Plan will be achieved. Moreover, the Controlled Surface Use stipulation printed in the lease sale advertisement does not cover all of the Scenic Byway prescription 7.A area, since that stipulation only covers sections 14 and 25, while 7.A is located in sections 35 and 36 as well. This CSU stipulation also does not specify what the constraints would be to ensure compliance with the Forest Plan standards for the Scenic Byway.

The proposed parcels located in Township 21S, Range 6E (and perhaps other parcels as well) fall within the Pinhoti Trail viewshed, which is known for its "very scenic waterfalls" and "superb views,"⁵² contain the Bulls Gap trailhead to the Pinhoti Trail, and are also within the *Alabama Mountain Treasures'* proposed Rebecca Mountain Wilderness, known as "the last great mountain of the Talladega chain."⁵³ Similar to the Scenic Byway discussed above, the Pinhoti National Recreation Trail is protected by Forest Plan standards which designate a "trail corridor

⁴⁹ Marshall and Wills, *supra* at note 47, at 20.

⁵⁰ Russell Helms, *60 Hikes within 60 Miles of Birmingham* (2003) available at www.trails.com/trailguide.aspx?trailid=HGD149-008.

⁵¹ Marshall and Wills, *supra* at note 47, at 30.

⁵² *Id.* at 18.

⁵³ *Id.* at 32.

protection zone" of 100' on each side of the trail and set a High scenic integrity objective for the foreground of the trails (views from the trail to about ½ mile). Forest Plan at 2-57 and App. B-28. There appear to be no stipulations attached to the lease sale to ensure compliance with the trail corridor protection zone and the High scenic integrity objective.

The parcels in Township 15S, Range 9E, Section 13, 18 and 24, south of Whitesides Mill Lake/Hammer Reservoir, fall within the proposed Horseshoe Bend Scenic Area, which contains a particularly scenic portion of Shoal Creek surrounded by old growth hardwood and longleaf pine forest which supported, and may still support, a red-cockaded woodpecker colony.⁵⁴

Finally, on the Oakmulgee District, the parcels in Township 21N, Range 8E, Section 23 border the Cahaba River, a state-designated Outstanding Alabama Water. This section of the Cahaba River is eligible for federal designation as a Scenic River under the Wild and Scenic Rivers Act and the plan placed it in management prescription 2.C, Eligible Wild and Scenic Rivers. Forest Plan at 3-12 and App. D-3. In eligible Scenic River corridors, the Plan permits leasing with a Controlled Surface Use (CSU) stipulation, so long as the High scenic integrity objective is met. *Id.* The stipulations attached to the proposed lease sale, however, do not track the Forest Plan, as they reference only eligible Wild River segments, thus creating confusion regarding their application to the eligible Cahaba Scenic River. Moreover, the FEIS did not consider the effects of gas drilling and hydrofracking on the Cahaba River, even if drilling is directional without surface occupancy. We believe that oil and gas leasing and development on what is apparently the only National Forest parcel on the entire Cahaba River is not appropriate. Further, most parcels on the Oakmulgee Division appear to be located within the Forest Plan's management prescriptions for Red-Cockaded Woodpecker sub-HMA (Habitat Management Area) (Prescription 8.D.1) and Restoration of Longleaf Pine Forests (Prescription 9.D). Several parcels along the creeks also appear to be located within prescription areas for Maintenance and Restoration of Upland and Bottomland Hardwoods (Prescription 9.G). It is unclear how the Plan's objectives for the woodpecker and for restoration of these forest types can be met if these areas are leased and drilled, as discussed further below.

Nowhere do the agencies assess the impacts of potential high volume hydrofracking operations on the use and enjoyment of these recreational and scenic areas.

iii. The 2004 FEIS Must Be Supplemented to Adequately Assess the Current Reasonable Potential for Drilling in Alabama's National Forests.

In the face of the new information that has arisen since the 2004 FEIS, further analysis is now required under NEPA to determine the reasonable potential for drilling on the parcels. The Interstate Oil and Gas Compact Commission estimates that hydraulic fracturing is now used on

⁵⁴ Marshall and Wills, *supra* at note 47, at 21.

90 percent of domestic oil and gas wells.⁵⁵ Add to that the recent advances in shale and other unconventional gas recovery using high-volume horizontal hydrofracking, which is estimated to be 2-3 times more productive than conventional vertical wells. *Id.* The result is the likelihood of greater increases in the demand for and productivity of leases in areas where industry has typically not shown significant interest or success.

The Forest Plan analyzed the areas of the Alabama National Forests with mineral potential using a "Reasonable Foreseeable Development Scenario," ("RFD") which has been developed by BLM geologists. *See* 2004 FEIS at 3-62. This study attempts to predict the potential for oil and gas development in the area over the next ten years based on anticipated development and interest during that time, and predicts the associated environmental effects of this anticipated development. *See id.* at 3-62 -3-65. The RFD is typically based on "subsurface geology, past development history, current activity, anticipated future demand with consideration of other significant factors, such as economics, technology, physical limitations on access, existing or anticipated infrastructure, and transportation." *Id.* at 3-65. As discussed above, it was based on this RFD that the Forest Service estimated that over the next ten years, one oil/gas well would be drilled in Bankhead Forest, one on the Talladega Forest, and 10 (one per year) on the Conecuh Forest. *Id.* at 3-66.

It is highly likely that these projections are now gross underestimates due to the new advances in the oil and gas industry. In fact, there is evidence that these developments in technology have already impacted oil and gas drilling in Alabama. Shale formations in Alabama can be found in the Black Warrior Basin and the Appalachian Thrust Belt, and include the Middle Cambrian Conasauga Formation, a variety of Devonian shale units, and the Mississippian Neal (Floyd) Shale.⁵⁶ In recent years, there has been an increased interest in natural gas exploration on Alabama's private lands. In 2005, Dominion Exploration and Production, Inc. discovered gas in the Conasauga Formation, a landmark event representing the first commercial gas production from shale in the state of Alabama.⁵⁷ Since then, energy companies have been pursuing drilling rights in Alabama in order to gain access to its shale plays, whose potential have been compared to the Barnett Shale in Texas.⁵⁸ Currently, the industry is in the beginning stages of developing these shale resources, with multiple gas plays active in Alabama's Black Warrior Basin and Appalachia Thrust Belt.⁵⁹ The Neal Shale in particular has been described by the Geological Survey of Alabama as "the subject of intensive shale-gas exploration in recent

⁵⁵ Railroad Commission of Texas, Testimony Submitted to the House Committee on Energy and Commerce by Victor Carrillo, Chairman, Texas Railroad Commission, Representing the Interstate Oil and Gas Compact Commission (Feb. 10, 2005), available at

http://www.archive.org/stream/energypolicvact00statgoog/energypolicvact00statgoog_djvu.txt.

⁵⁶ Jack C. Pashin, Geological Survey of Alabama, *Gas Shale Potential of Alabama* at 1(2008), available at <http://www.rpsea.org/attachments/contentmanagers/429/Pashin%20AL.pdf>.

⁵⁷ *Id.* at 3-4.

⁵⁸ Mining Top News, *Natural gas field drawing energy firms to Alabama* (February 10, 2007), available at <http://www.miningtopnews.com/natural-gas-field-drawing-energy-firms-to-alabama.html>.

⁵⁹ Pashin, *supra* at note 56, at 1.

years.”⁶⁰ Natural gas drilling companies have been reported to pay up to \$500 an acre for these rights in Alabama, in addition to a share of potential revenues from drilling. *Id.* This spiking demand illustrates the likelihood of increased interest in the development of shale plays in Alabama's National Forests through high volume hydrofracking, a phenomenon that was not evaluated in the 2004 EIS.

Many of the Alabama parcels are located in shale basins and plays, such as those in the Talladega National Forest, that have garnered development interest from the natural gas industry.⁶¹ Over 75,000 acres of the Oakmulgee Division of the Talladega National Forest were leased for drilling in 2007, showing greatly increased interest in gas development on the Forest which was unanticipated during the 2004 Plan revision. Thus, we do not agree with the 2004 FEIS' conclusion that economic conditions and a lack of interest in the development of oil and gas wells in the National Forests will continue in light of these recent changes. The RFD and NEPA analysis based on its conclusions must be supplemented to consider increased development of shale resources in the National Forests.

iv. The 2004 FEIS Must be Supplemented to Adequately Consider Cumulative Impacts from Development on Privately Owned Mineral Rights and Private Land.

There are 90,414 acres of federal surface within the National Forests of Alabama that are subject to privately owned mineral interests, which comprises about 13.5 percent of the forest area. *See* 2004 FEIS at 3-56. Of this, 80,337 acres are subject to 100% private mineral ownership. *See id.* As is clearly stated in the 2004 FEIS, the exercise of these private mineral rights on National Forest lands “is a private decision, not a federal decision.” 2004 FEIS at 3-71. Therefore, all Forest Plan alternatives are subject to these existing private rights.

Under NEPA, there must be an analysis of cumulative impacts on the environment in an Environmental Impact Statement. This cumulative impacts analysis must assess “past, present, and reasonably foreseeable future actions” and the incremental impact of the proposed activities when added to that baseline, whether those actions and activities are private or governmental. 40 C.F.R. § 1508.7. This requires “some quantified or detailed information.” *Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998). Despite this, the 2004 FEIS failed to estimate the potential impacts of drilling on private mineral rights and nearby private lands in assessing the regional cumulative impacts of drilling operations. This should have included an assessment of environmental impacts that are expected to occur in light of other past, present, and reasonably foreseeable future activities in the region, both public and private.

⁶⁰ *Id.* at 3.

⁶¹ *See* U.S. Energy Information Administration, *Review of Emerging Resources: U.S. Shale Gas and Shale Oil Plays* 6, 33 (July 2011) available at <http://ftp.eia.doe.gov/natgas/usshaleplays.pdf>. Large parts of the Talladega National Forest overlie the Black Warrior Basin. The EIA estimates that combined Conasaugua/Floyd-Neal shale play contains 4.37 trillion cubic feet of technically recoverable natural gas.

Despite the large acreage available to private mineral development in the National Forests, not only did the FEIS fail to predict environmental impacts on forest resources from any future exercise of these private mineral rights in its cumulative impacts assessment, it also could not consider the *increased* potential for private mineral development due to the heightened commercial viability of drilling for shale gas after the plan was adopted. The agencies must supplement the 2004 FEIS to consider the impacts of potential private mineral development on the National Forests and on adjacent and nearby private lands in light of this new information.

v. BLM and the Forest Service Must Supplement the 2004 FEIS to Adequately Consider Impacts to Listed Species and Their Critical Habitat.

The agencies cannot rely on the 2004 FEIS in approving leasing of the Alabama parcels due to the fact that it fails to assess impacts from oil and gas drilling on listed species and critical habitat that were added after its publication, and it must be supplemented to analyze the impacts from unconventional oil and gas development and hydrofracking to listed species and critical habitat.

Since 2004, the U.S. Fish and Wildlife Service has listed one mussel species that is found in the Alabama National Forests, meaning that it was not considered in the 2004 FEIS. This species is the Georgia pigtoe, which was listed as endangered on Dec. 2, 2010, and had critical habitat designated concurrent with its listing. *See* 75 Fed. Reg. 67,512 (Nov. 2, 2010). The Georgia pigtoe's critical habitat includes Terrapin Creek and Hatchet Creek, which, upon information and belief, may be impacted by this lease sale.

In addition, designated critical habitat for many previously listed aquatic species is now found in the National Forests in Alabama, and is potentially impacted by the leasing of many of the parcels offered in this proposed lease sale. These impacts must be assessed prior to the issuance of these leases. In July of 2004, several months after the release of the 2004 FEIS, the Fish and Wildlife Service designated new critical habitat for 11 mussel species: the fire-lined pocketbook, orange-nacre mucket, Alabama moccasinshell, Coosa moccasinshell, ovate clubshell, southern clubshell, dark pigtoe, southern pigtoe, triangular kidneyshell, southern acornshell, and upland combshell. *See* 69 Fed. Reg. 40,084, 40,107 (July 1, 2004). Segments of this critical habitat are located in the Alabama National Forests, including 10 miles in the Tuskegee National Forest, 83 miles in the Bankhead National Forest, and 40 miles in the Talladega National Forest. *Id.* The ESA's regulations mandate that federal agencies reinitiate consultation when critical habitat is designated and those agencies' actions may affect it. *See* 50 C.F.R. § 402.16. These species and critical habitat could potentially be found on the Alabama parcels and/or impacted by drilling operations on those parcels, making it critical that the agencies re-evaluate and re-consult on drilling's potential impacts prior to issuing any leases.⁶²

⁶² *See* discussion on consultation under the Endangered Species Act, *infra* at page 29.

Due to this critical habitat designation, the agencies must reinitiate consultation with the Fish and Wildlife Service.

The 2004 FEIS also must be supplemented to analyze impacts of hydrofracking on the listed species and critical habitat found in the National Forests. Based upon information and belief, drilling on the proposed parcels may affect listed species in the National Forests. For example, parcels at Township 15S, Range 9E, Section 12 are located in a Red-Cockaded Woodpecker sub-HMA designation, according to the Forest Plan. This HMA, which is specifically managed to provide habitat for Red Cockaded Woodpeckers, was deemed by the 2004 FEIS to be "essential support" for the recovery of the species. The 2004 FEIS mandates that a minimum of 3,000 acres of foraging must be restored in the Shoal Creek HMA, allowing for 24 cluster sites, in order for the Forest Service to comply with the Red-Cockaded Woodpecker Revised Recovery Plan. *See* 2004 FEIS at 3-194. The agencies must consult with the U.S. Fish and Wildlife Service to determine whether increased drilling operations may affect the habitat of the Red-Cockaded Woodpecker, and the Forest Service's ability to meet recovery goals, prior to authorizing leasing of these parcels.

There are 25 aquatic federally listed endangered and threatened species associated with the National Forests of Alabama, with mollusks composing nearly 75% of these species. 2004 FEIS at 3-207. The vast majority of these species are potentially harmed by activities that could "increase sedimentation, siltation, or turbidity, contribute pollutants, adjust water chemistry or nutrient cycling, raise water temperatures, change flow, modify habitat, alter streamside vegetation, or block fish passage." 2004 FEIS at 3-219.⁶³

Unconventional oil and gas development and hydrofracking can impact listed species by altering habitat through construction of access roads, clearing and leveling of drill pad sites, and construction of pipelines and facilities. This can cause increased sedimentation from construction site runoff; addition of pollutants to aquatic resources due to accidents or land application of chemicals and fracturing fluids; and changes in water chemistry and water temperature due to significant water withdrawals that lessen the dilution of toxics in waterways, among other potential impacts. Specifically, the 2004 FEIS notes that "aquatic animals could be impacted by airborne dust settling on the nearby streambeds and pond bottoms" and "[s]ediment washed down from the disturbed sites would also adversely impact aquatic life." *Id.* at 3-69. The increased potential impacts to listed species and critical habitat from unconventional oil and gas development and hydrofracking have not been analyzed by the agencies.

⁶³ *See* discussion of endangered Cahaba shiner, *id.* at 3-218; threatened goldline darter, *id.* at 3-220; endangered upland combshell, *id.* at 3-224; endangered southern acornshell, *id.* at 3-225; threatened fine-lined pocketbook, *id.* at 3-227; threatened orange-nacre mucket, *id.* at 3-229; threatened Alabama moccasinshell, *id.* at 3-231; endangered Coosa moccasinshell, *id.* at 3-232; endangered Southern clubshell, *id.* at 3-234; endangered southern pigtoe, *id.* at 3-238; endangered ovate clubshell, *id.* at 3-240; endangered triangular kidneyshell, *id.* at 3-241; endangered Lacy elimia snail, *id.* at 3-243; and threatened painted rocksnail, *id.* at 3-246).

In addition, based upon information and belief, several of these aquatic species are found near parcels that are included in this lease sale. This includes the upland combshell, southern acornshell, fine-lined pocketbook, Coosa moccasinshell, southern clubshell, ovate clubshell, triangular kidneyshell, which have critical habitat on Terrapin Creek within the Shoal Creek District of the Talladega National Forest, *see id.* at 3-224 – 3,240; *see also* 69 Fed. Reg. 40,084, 40,106; the Lacy elimia snail, which is located on Cheaha Creek downstream of the Talladega district, *see* 2004 FEIS at 3-243; the painted rocksnail, which is located on Choccolocco Creek, *see id.* at 3-246; and several species that may be impacted by activities in the Oakmulgee Division of the Talladega National Forest, including the Cahaba shiner, goldline darter, southern acornshell, orange-nacre mucket, Alabama moccasinshell, southern clubshell, ovate clubshell, triangular kidneyshell. *See* 69 Fed. Reg. 40,105.

In addition, the fine-lined pocketbook, Coosa moccasinshell, triangular kidneyshell, and southern pigtoe have critical habitat on Hatchet Creek, the Shoal Creek tributary to the Upper Choccolocco, and Cheaha Creek within the Talladega District; in addition, the fine-lined pocketbook also has critical habitat in Cane Creek. 2004 FEIS at 3-227- 3-241; 69 Fed. Reg. 40,106-40,156. The agencies must analyze the impacts to these listed species and critical habitat under NEPA before allowing leasing of the parcels to go forward.

In summary, in the face of the new information that has arisen since the 2004 FEIS, further analysis is now required under NEPA. The 2004 FEIS' lack of assessment of these potentially significant environmental impacts on Alabama's National Forests due to high volume hydraulic fracturing and the dramatically increased interest in drilling here is a fatal flaw in this NEPA analysis, requiring the agencies to supplement the 2004 FEIS to conduct more analysis and public disclosure of its impacts prior to leasing these parcels. This process of supplementing the FEIS should include public notice and an opportunity for interested members of the public to comment on a draft supplement, in order to ensure meaningful participation and informed decisionmaking.

b. BLM and the Forest Service Have Failed to Consider a Reasonable Range of Alternatives for Development of Oil and Gas in the Forest Service FEIS.

The Forest Plan's FEIS violates NEPA by failing to consider a reasonable range of alternatives in the acreage and amount of federally-owned minerals it will make available for leasing in its impact statement. Under NEPA, an EIS must consider and discuss reasonable alternatives to the proposed action. 42 U.S.C. § 4332(2)(c)(iii); 40 C.F.R. § 1502.14. It should sharply define the issues and provide a "clear basis for choice among options by the decisionmaker and the public." *Id.* Agencies must "rigorously explore and objectively evaluate all reasonable alternatives." *Id.* at 1502.14(a). The EIS must "provide a full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." *Id.* at 1502.1.

Accordingly, “[a]n agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action, and sufficient to permit a reasoned choice.” *Idaho Conservation League v. Mumba*, 956 F.2d 1508, 1520 (9th Cir. 1992) (internal citations omitted); see also *Headwaters, Inc. v. Bureau of Land Management*, 914 F.2d 1174, 1180-81 (9th Cir. 1990) (“appropriate range of alternatives” must be considered). The “existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” *Idaho Conservation League*, 956 F.2d at 1519 (internal citations omitted).

The National Forest Management Act (NFMA) regulations also require consideration of alternatives, providing that the agency “shall formulate a broad range of reasonable alternatives according to NEPA procedures . . . Alternatives shall be distributed between the minimum resource potential and the maximum resource potential.” 36 C.F.R. § 219.12(f)(1) (Sept. 30, 1982).

Despite this mandate, all of the alternatives considered by the Forest Service contained identical management prescription allocations for mineral resources. See 2004 FEIS at 2-13. In the 2004 FEIS, every single alternative considered by the Forest Service had exactly the same area of the Forests open to mineral exploration and development – 92.2 percent. See 2004 FEIS at 2-26. While the alternatives varied in the stipulations applied, the FEIS itself admitted that “total acreage available for lease would remain virtually the same” under all alternatives. 2004 FEIS at 3-74. This alternatives analysis fails to represent a full spectrum – or any spectrum – of reasonable alternatives for oil and gas leasing availability in the National Forests. This is a significant flaw in the 2004 FEIS that must be cured before any oil and gas leases can be sold by BLM. Particularly now that the impacts of allowing leasing and drilling on 92% of the forest have changed so much, it is essential that the agencies consider, with public participation, a full range of alternatives for oil and gas development on the forest.

c. BLM’s Issuance of Leases would Constitute an Irretrievable Commitment of Resources in Violation of NEPA.

The protesting parties also object to BLM’s vesting of development rights at the time of lease issuance, which severely limits the agency’s ability to respond to site-specific concerns that might arise later in time. This may lead to a situation where BLM or the Forest Service is unable to impose stipulations that are necessary in order to comply with federal laws and regulations or to fulfill their goals, due to perceived infringement on the rights of lessees.

For example, the 2004 FEIS states that, for any limitations that the Forest Service might impose on surface activities by lessees, those limitations will be “considered consistent with the lease rights granted, provided they do not require relocation of proposed operations by more than 200 meters, require that the operations be sited off the leasehold, or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year.” 2004 FEIS at 3-63. This significantly restricts the agencies’ ability to ensure the protection of national forest

resources. Importantly, since the agencies apparently do not intend to conduct a site-specific investigation until the lessee submits an Application for Permission to Drill (APD), there may be significant impacts that are not fully understood until after development rights have been sold.

The agencies' interpretation of lease issuance under these terms apparently does not reserve to BLM the right to prevent surface disturbing activities except for, potentially, the limited purpose of ensuring against jeopardy to listed species.⁶⁴ The issuance of leases in their current form cannot ensure that BLM and the Forest Service will have the authority to enforce the additional stipulations they may find necessary to ensure the conservation and recovery of listed species, or to meet the Forest Service's obligations under the NFMA (discussed further below), should a site specific analysis reveal, for example, that a particular parcel is unsuitable for surface occupancy. The Forest Service itself has stated that "once a lease is issued the opportunity to deny access is irreversible for the life of the lease or the life of the producing field."⁶⁵

Thus, lease issuance constitutes an irretrievable commitment of resources under NEPA section 102. Under NEPA, courts have determined that BLM and the Forest Service are obligated to fully analyze impacts arising from oil and gas development *prior* to issuing leases. *See, e.g., Southern Utah Wilderness Alliance*, 159 IBLA 220, 224-43 (2003); *Pennaco Energy, Inc. v. U.S. Dep't of the Interior*, 377 F.3d 1147 (10th Cir. 2004); *Conner v. Burford*, 848 F.2d 1441 (9th Cir. 1988); *Sierra Club v. Peterson*, 717 F.2d 1409 (D.C. Cir. 1983).

It is also well-established that in order to satisfy NEPA, the environmental analysis must be site-specific. *See New Mexico ex rel. Richardson v. Bureau of Land Management*, 565 F.3d 683, 717-20 (10th Cir. 2009) (holding that where "any environmental impacts [are] reasonably foreseeable at the leasing stage," NEPA requires an analysis of the site-specific impacts of leasing). However, no such site-specific analysis has been conducted by BLM or the Forest Service in this case.

Moreover, the parties to this protest have requested that BLM provide maps of the contested parcels to the public, so that interested members of the public can understand and evaluate the effects of leasing for oil and gas development on National Forest resources. BLM claimed not to have maps. The Forest Service eventually provided maps of the parcels located in the Talladega and Shoal Creek divisions of the Talladega National Forest, which the parties appreciated. However, the Forest Service did not provide maps of the parcels in the Oakmulgee Division. It is our understanding that maps for those parcels in the Oakmulgee Division have not been created by either BLM or the Forest Service. Without having ever mapped these parcels, it

⁶⁴ None of the contested parcels is covered entirely by an NSO stipulation. One section of parcel ALES 057443 is subject to an NSO stipulation, but surface disturbing development is not precluded on the other sections of the lease, and even the NSO stipulation is unclear for reasons discussed further below.

⁶⁵ *See* Final Environmental Impact Statement on Oil and Gas Leasing in Bridger-Teton National Forest (Feb. 2003) at 3-192.

is difficult to imagine how the agencies could possibly have undertaken an adequate site-specific analysis. Because no site-specific analyses have been performed, leasing the contested parcels would violate the BLM's obligations under the National Environmental Policy Act.

Leasing should not move forward until either the current lease terms are amended to allow for more broad authority to restrict or forbid drilling in order to comply with federal law, or until site-specific evaluations of the Alabama parcels have been conducted and necessary information obtained to ensure that lease stipulations are sufficient to ensure compliance with federal laws.

III. BLM and the Forest Service Will Violate The ESA If They Offer These Parcels For Sale.

BLM and the Forest Service must consult with the U.S. Fish and Wildlife Service (FWS) on the impacts to listed species and critical habitat from proposed drilling prior to issuing oil and gas leases. As of 2004, when the Forest Plan was released, the National Forests of Alabama contained habitat supporting 54 federally listed species under the Endangered Species Act, including the bald eagle, the Red-Cockaded Woodpecker, and many aquatic species. See 2004 Forest Plan at 2-28. Many of these species may be affected by the proposed oil and gas drilling activities. Indeed, this oil and gas leasing and development seem likely to adversely affect many of these species, particularly the Red-Cockaded Woodpecker and the aquatic species, and to adversely modify any designated critical habitat in or downstream from the lease parcels, as discussed above.

In addition, the FWS has listed additional species and critical habitat impacting the National Forests, as discussed above. Despite this, as far as the protesting parties have been able to determine, while the Forest Service appears to have engaged in informal consultation on the Forest Plan in 2003, resulting in a biological assessment, neither the Forest Service nor BLM have yet consulted with FWS on the site-specific impacts of this lease sale. Nor have the agencies reinitiated consultation to consider impacts on newly listed species, newly designated critical habitat, or the emergence of high volume shale hydrofracking. This violates the ESA.

The ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service regarding the impacts of proposed federal actions on threatened and endangered species. 16 U.S.C. § 1536(a)(2). Agencies, in consultation with FWS, must insure that their actions are not likely to jeopardize the existence of listed species or to destroy or adversely modify any designated critical habitat. *Id.* Further, ESA's implementing regulations mandate that "[e]ach federal agency shall review its actions at the *earliest possible time*" to determine whether an action may affect protected species and, if so, to engage in the appropriate consultation. 50 C.F.R. § 402.14(a) (emphasis added); see also *Wilderness Soc'y v. Wisely*, 524 F. Supp. 2d 1285, 1301 (D. Colo. 2007) ("[T]he BLM's duty to confer with the FWS arises as of the time that it was possible for the two agencies to engage in meaningful conference regarding the decision to

be made"). If a proposed action "may affect listed species or critical habitat," then the agency must formally consult with FWS, unless, as a result of informal consultation, the agency determines that the action "may affect, but "is not likely to adversely affect listed species or critical habitat," and the FWS concurs. 50 C.F.R. §§ 402.13(a), 402.14(a)-(b).

In addition, as discussed above, the ESA's regulations mandate that federal agencies reinitiate consultation when a new species is listed or critical habitat is designated and those agencies' actions may affect it. See 50 C.F.R. § 402.16(d). Further, these regulations also mandate that federal agencies reinitiate consultation when "new information reveals effects that may affect listed species or critical habitat in a manner or to an extent not previously considered." *Id.* at 402.16(b).

Contrary to this requirement, neither the Forest Service nor BLM have consulted with FWS on this lease sale. To the extent that the agencies may attempt to rely on the informal consultation on the Forest Plan, that consultation is not adequate to cover this lease sale. First, the new species listing, new critical habitat designations, and new information regarding the extent and type of drilling here require the reinitiation of consultation prior to any lease sale. Second, the consultation on the Forest Plan did not consider the site-specific impacts of leasing and gas development here. Third, such leasing and gas development here obviously are likely to adversely affect listed species and critical habitat, necessitating *formal consultation* prior to the sale of any leases. To the parties' knowledge, formal consultation has never occurred. To the extent that the agencies may contemplate delaying any further consultation until *after* the parcels have already been auctioned off at the lease sale, this would be impermissible, because NEPA analysis and ESA consultation must occur *prior* to the irretrievable commitment to the sale of those leases. The Forest Service and BLM must consult with the Fish and Wildlife Service over impacts to listed species and critical habitat in the Alabama National Forests prior to issuing leases. Their failure to reinitiate consultation violates the ESA.

IV. BLM and the Forest Service Should Delay Leasing of Alabama Parcels until New Rules are Promulgated.

There are several new rules in the process of being enacted that will address hydrofracking. For example, the Bureau of Land Management is currently in the process of issuing federal hydraulic fracturing regulations, which will apply to oil and gas leasing activities on federal lands.⁶⁶ These are reported to include requirements that companies disclose chemicals in their fracturing fluids, and also mandate that companies win approval prior to using hydraulic fracturing technology on federal lands.⁶⁷ In addition, the U.S. Environmental Protection Agency (EPA) is expected to release rules governing air pollution from hydraulic fracturing in April of

⁶⁶ Bureau of Land Management News Release, *BLM Begins New Look At Oil Shale Plans* (Apr. 13, 2011), available at http://www.blm.gov/wo/st/en/info/newsroom/2011/april/NR_04_13_2011.html.

⁶⁷ Houston Business Journal, *Fracturing regulation would benefit industry, Interior Secretary says* (Apr. 9, 2012), available at http://www.bizjournals.com/houston/morning_call/2012/04/interior-secretary-voices-support-for.html.

2012, as required under a consent decree entered into with environmental groups, that is expected to curb smog-forming VOCs, emissions of benzene, and releases of methane.⁶⁸ Lastly, the EPA is currently conducting a study to assess the impacts of hydraulic fracturing on drinking water resources, according to its plan, which was released in November 2011.⁶⁹

It is unclear how these regulations will apply to hydrofracking operations that are already permitted on federal lands. In light of this, the protesting parties believe that it is premature and inappropriate to lease the Alabama parcels, where hydraulic fracturing could potentially be conducted, prior to the promulgation and entry into force of these new regulations. Once these regulations are issued, all future leases should incorporate the new regulations into their lease terms. In addition, the protesting parties believe that the lease of these parcels should be suspended until the EPA issues the results of its study on drinking water impacts, in order to ensure that the full impacts of hydrofracking are understood and incorporated into any supplemental NEPA analysis and future decisionmaking.

V. BLM and the Forest Service Will Violate the NFMA If They Offer These Parcels For Sale.

The Forest Service and BLM will violate the National Forest Management Act (NFMA) if they offer these parcels for sale. Under the NFMA, the Forest Service's land management plans must achieve several goals, including: (1) insuring consideration of the economic and environmental aspects of renewable resource management, "including the related systems of silviculture and protection of forest resources, to provide for outdoor recreation (including wilderness), range, timber, watershed, wildlife, and fish"; (2) providing for diversity of plant and animal communities; and (3) insuring research on and evaluation of the effects of each management system to ensure that it will not produce substantial and permanent impairment of the productivity of the land, among other goals. 16 U.S.C. § 1604(g). In addition, NFMA requires that "[r]esource plans and permits, contracts and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans." 16 U.S.C. § 1604(i).

Essentially, this means that the Forest Service, in its Plan, must provide for certain resources such as outdoor recreation, watershed integrity, fish and wildlife, plant and animal diversity, and soil productivity, and all oil and gas development activities must be consistent with the Forest Plan. See *Northwoods Wilderness Recovery, Inc. v. U.S. Forest Service*, 323 F.3d 405, 407 (6th Cir. 2003) ("Implementation of the forest plan is achieved through individual site-

⁶⁸ Ben Geman, The Hill, *EPA delays 'fracking' air pollution rules* (Apr. 2, 2012), available at <http://thehill.com/blogs/e2-wire/e2-wire/219565-epa-delays-fracking-air-pollution-rules>. See proposed rule at 76 Fed. Reg. 52,738 (Aug. 23, 2011).

⁶⁹ See U.S. Envtl. Prot. Agency, Office of Research and Development, *Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources* (Nov. 2011), available at http://water.epa.gov/tvps/groundwater/uic/class2/hydraulicfracturing/upload/hf_study_plan_110211_final_508.pdf.

specific projects, and all projects must be consistent with the forest plan.”); *see also Cherokee Forest Voices v. U.S. Forest Service*, 2006 U.S. App. LEXIS 13214 at *11-12 (6th Cir. May 25, 2006); *Sierra Club v. Martin*, 168 F.3d 1, 4-5 (11th Cir. 1999); *Friends of Southeast's Future v. Morrison*, 153 F.3d 1059, 1068 (9th Cir. 1998); *National Audubon Soc'y v. Hoffman*, 132 F.3d 7, 19 (2nd Cir. 1997).

In summary, the Forest Service has a duty to ensure that the amount of drilling permitted by this lease sale will still allow it to provide for the resources mandated under NFMA. This it has not done. Rather, the leasing appears to violate the NFMA by placing oil and gas development above other management prescriptions and other natural resources and by failing to ensure that lease stipulations for oil and gas development activities are sufficient to enforce all applicable Forest Plan standards. As a prime example of the agencies' failure to comply with NFMA, in 2010, the Forest Service issued an amendment to its Forest Plan, titled FW 185, which limits surface occupancy during minerals leasing operations to slopes that are equal to or less than 40 percent.⁷⁰ This standard has been incorporated into the Forest Plan. However, despite NFMA's mandate that leasing operations be consistent with Forest Plan standards, the lease sale notice does not include this standard in its lease stipulations.

The lack of maps for all parcels in the lease sale also prevents the Forest Service from adequately exercising its authority to ensure that leasing on the forest is consistent with the Forest Plan. If the Forest Service has not created maps of parcels in the Oakmulgee Division of the Talladega National Forest, and if it has not actually reviewed and evaluated the specific parcels displayed on its other maps, it cannot determine exactly where each parcel is, and what effects leasing might have. It also cannot adequately evaluate whether forest resources or other uses of the forest may be affected. Nor can the Forest Service ensure that leasing is consistent with its management plan. Perhaps for this reason, many of the proposed leases conflict with existing Forest Service management prescriptions.

The lease of the contested parcels would make several areas available for drilling, despite the conflict between the effects of drilling and the desired condition of these areas as stated in the management prescriptions.⁷¹ While some areas require that leasing conform to controlled surface use stipulations, neither the 2004 FEIS nor the lease sale analyze whether these stipulations will ensure that the prescribed condition of these lands will not be compromised by drilling activities. Moreover, the Forest Service has not even considered whether it can meet its NFMA obligations to provide for these resources if the increased extent and new type of gas drilling and hydrofracking that now seems likely is allowed to go forward.

⁷⁰ See National Forests in Alabama Revised Land and Resource Management Plan Amendment #2 – Minerals Operation Standard (Dec. 27, 2010).

⁷¹ The protesting parties note that it is exceedingly difficult to them to determine the impact of leasing the parcels on the Forest Plan's management prescriptions (and other impacts), due to the lack of site-specific information in BLM's Notice of Competitive Lease Sale document.

Should the agencies allow active lease development with such significant impacts, it will likely interfere upon the management prescriptions of Alabama's National Forests, most of which are prescribed for restoration and/or recreation. As a result, more information and analysis is needed on how areas with high conservation priorities will be affected by gas development in order to comply with NFMA.

It is possible that BLM would also violate its own internal direction were it to offer these parcels for sale. On February 13, 2009, the acting Director of BLM issued a Memorandum to all State Directors requiring certain steps to be followed to "allow for a full review of parcels prior to an oil and gas lease sale." These steps include preparation of an initial briefing paper to the Washington office of BLM 50-55 days prior to the lease sale. Information to be provided in this briefing paper includes discussion of roadless characteristics, whether any of the parcels are in citizen proposed wilderness and whether any of the parcels involved an endangered species or BLM-listed sensitive species. Clearly, the parcels meet these conditions. It is unclear whether BLM has complied with this mandate.

Lastly, it is unclear that the agencies have considered whether they are capable of overseeing this level of oil and gas production in the Alabama National Forests. The Department of Interior's ability to police drilling on public lands has been called into question recently by a report prepared at the request of U.S. Representatives Edward J. Markey and Rush D. Holt, titled *Drilling Dysfunction: How the Failure to Oversee Drilling on Public Lands Endangers Health and the Environment*.⁷² The report documented many violations of oil and gas drilling rules on federal lease and showed that only a "very small percentage of violations result in fines." *Id.* at 3. In addition, it is unclear that state regulators have the funding or staff to adequately enforce state oil and gas regulations.⁷³ The agencies must consider the likelihood of violations by lessees in determining the ultimate environmental impact of drilling on the parcels, and ought to weigh whether the potential harm caused by these violations mandates a greater demonstration of the agencies' ability to police these industries prior to the leasing of additional lands.

REQUEST FOR RELIEF

The protesting parties request that BLM withdraw the protested parcels from the June 2012 Competitive Oil and Gas Lease Sale until such time as BLM and the Forest Service have complied with federal laws and regulations, including NEPA, the ESA, and the NFMA. In conducting its NEPA supplementation, the Forest Service should consider whether sensitive parcels may be inappropriate for oil and gas development due to the presence of aquatic resources, listed or sensitive species, important recreational features, or other characteristics.

⁷² Available at http://democrats.naturalresources.house.gov/sites/democrats.naturalresources.house.gov/files/2012-02-08_RPT_DrillingDysfunction.pdf.

⁷³ See Abraham Lustgarten, ProPublica, *State Oil and Gas Regulators Are Spread Too Thin to Do Their Jobs* (Dec. 30, 2009), available at <https://www.propublica.org/article/state-oil-and-gas-regulators-are-spread-too-thin-to-do-their-jobs-1230>.

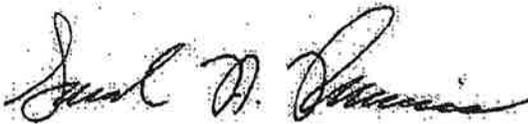
Furthermore, the leasing of parcels in the Alabama National Forests should be delayed until the enactment of new BLM rules governing hydrofracking; EPA air quality rules; and EPA's final study on the impacts of hydrofracking on drinking water resources. The protesting parties further request that BLM suspend the offering of the Alabama parcels while the agency considers this protest.

Thank you for your consideration of this protest letter. Wild South's address is: Ben Prater, Wild South, 16 Eagle Street, Suite 200, Asheville, NC 28801. Ben Prater can be reached by telephone at 828-258-2667. Natural Resources Defense Council's address is: Matthew McFeeley, Natural Resources Defense Council, 1152 15th Street N.W., Suite 300, Washington, D.C. 20005. Matthew McFeeley can be reached by telephone at 202-513-6250. Should you have any questions, please contact Keith Johnston or Sarah Francisco at the Southern Environmental Law Center.

Sincerely,



Keith Johnston
Managing Attorney, Birmingham Office
Southern Environmental Law Center
2829 Second Ave. S.
Ste. 282
Birmingham, AL 35233
tel: (205) 745-3060
fax: (205) 745-3064



Sarah A. Francisco
Senior Attorney
National Forests and Parks Program Leader
201 West Main Street, Suite 14
Charlottesville, VA 22902
tel: (434) 977-4090
fax: (434) 977-1483

cc: **Steve Lohr, Supervisor, National Forests in Alabama**
Elizabeth Agpaoa, Regional Forester, Southern Region
Andrew Colaninno, Director of Resource Information, Southern Region.



The Candler Building
127 Peachtree Street, Suite 605
Atlanta, GA 30303-1840
404-521-9900
Fax 404-521-9909
SouthernEnvironment.org

FAX COVER SHEET

DATE: April 16, 2012

TIME: 1:00 PM

TO: U.S. Department of Interior, Bureau of Land Management, Eastern States

FAX NUMBER: (703) 440-1551

FROM: The Southern Environmental Law Center

RE: Protest of BLM's Notice of Competitive Oil and Gas Lease Sale on June 14, 2012

Total number of pages (including cover sheet): 86 (part 2 of 2 faxes)

MESSAGE:

The Southern Environmental Law Center submits this Protest Letter and Attachments A and B on behalf of Wild South and the Natural Resources Defense Council in accordance with 43 C.F.R. 3120.1-3.

Please confirm by email to Katie Ottenweller at kottenweller@selcga.org before close of business today that you have received this Protest Letter and all related Attachments.

IF YOU HAVE RECEIVED THIS FAX IN ERROR, OR IF YOU ENCOUNTER PROBLEMS IN RECEIVING THIS TRANSMISSION, PLEASE CALL US IMMEDIATELY AT 404/521-9900.

Carolina's Office: 200 West Franklin Street, Suite 330, Chapel Hill, NC 27516-2559 919/967-1450
Georgia/Alabama Office: The Candler Building, 127 Peachtree Street, Suite 605, Atlanta, GA 30303-1800 404/521-9900

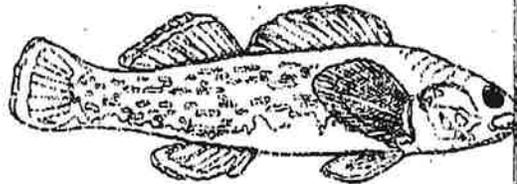
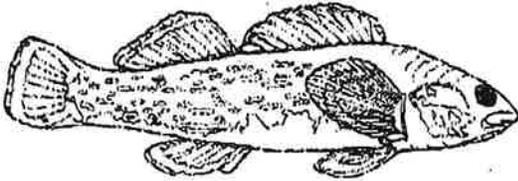
ATTACHMENT A

Protection of Aquatic Biodiversity
in the Southern Appalachian National Forests
and their Watersheds



Information for use in the Forest Plan Revision Process and Beyond

Compiled by
Dr. William O. McLaren
Franklin, NC



A Report of
The Southern Appalachian Forest Coalition
and
Pacific Rivers Council





Pacific Rivers Council

Pacific Rivers Council
P.O. Box 10798
Eugene, OR 97440
541-345-0119 www.pacrivers.org

SOUTHERN APPALACHIAN
F O R E S T
C O A L I T I O N

Southern Appalachian Forest Coalition
46 Haywood St., Suite 323
Asheville, NC 28801
828-252-9223 www.safc.org



The Coalition consists of seventeen member groups:

Alabama Environmental Council

205-322-3126

Chattooga River Watershed Coalition

706-782-6097

Cherokee Forest Voices

423-247-7895

Coalition for Jobs & the Environment

540-628-8996

Citizens Task Force

540-774-6690

Forest Service Employees for Environmental Ethics

864-638-9843

Georgia Forest Watch

706-635-8733

Nantahala Forest Watch

828-526-9284

National Audubon Society-NC

910-251-0666

Sierra Club

828-692-0262

South Carolina Forest Watch

864-647-8804

Southern Appalachian Biodiversity Project

828-258-2667

Southern Environmental Law Center

804-977-4090

The Wilderness Society

404-872-9453

Virginia Forest Watch

540-479-2176

Wild Alabama

256-974-6166

WNC Alliance

828-258-8737



Protection of Aquatic Biodiversity in the Southern Appalachian National Forests and their Watersheds: A Rapid Assessment

Information for use in the Forest Plan Revision Process and Beyond

A Report Of The Southern Appalachian Forest Coalition

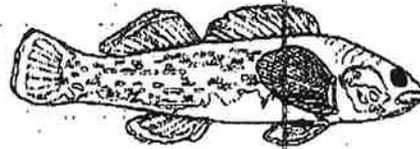
Compiled by
Dr. William O. McLarney
Franklin, NC

Edited by Susan Andrew and Hugh Irwin

In consultation with aquatic experts from around the southern Appalachians:

Steve Ahlstedt, US Geologic Survey
John Alderman, NC Wildlife Resources Commission
Art Bogan, NC State Museum of Natural Science
Richard Bruce, Highlands Biological Station
Noel Burkhead, USGS Caribbean Science Center
Billy Campbell, South Carolina Forest Watch
Ron Cicerello, Kentucky State Nature Preserves Commission
John Cooper, NC State Museum of Natural Science
Russ England, Georgia DNR
Patricia Flebbe, Virginia Polytechnic Institute
John Fridell, U.S. Fish & Wildlife Service
Jeff Garner, Alabama DNR
Jim Godwin, Alabama Natural Heritage Program
Robert Jenkins, Roanoke College
Judith Johnson, NC Wildlife Resources Commission
Lee Ann McDougal, USDA Forest Service
Chris McGrath, NC Wildlife Resources Commission
Ed Menhinick, UNC-Charlotte
Scott Metec, Geological Survey of Alabama
Richard Neves, Virginia Polytechnic Institute
Malcolm Pierson, Alabama Power & Light Co.
Charles Saylor, Tennessee Valley Authority
Wayne Starnes, NC State Museum of Natural Science
Bryn Tracy, NC DENR, Bioassessment Group
Buzz Williams, Chattooga River Watershed Coalition
Gary Williams, Tennessee Valley Authority

Executive Summary



The southeastern United States has recently been recognized as a global center of aquatic biodiversity. However, our understanding of this diversity—where it is found, and what must be done to conserve it—has yet to be fully grasped. This report focuses on the mountains of the region because it is here that our most natural landscapes, water quality, and public ownerships are found. The purpose of this report is to list and begin to prioritize stream reaches and their watersheds in order to develop strategies to protect aquatic biodiversity in and around our public lands, the Southern Appalachian National Forests. Barring a complete survey of the aquatic fauna of the region (something that has not been compiled at present), this report is intended as a "rapid assessment" of the most critical places requiring our attention for conservation efforts.

The author of this report consulted with a long list of recognized experts in the field of aquatic biology to compile the information presented within. This report prioritizes a set of 44 defined watershed units, or Aquatic Diversity Areas (ADAs), to identify a group of sites that, taken together, protect the greatest number of species, particularly imperiled forms, and simultaneously protect a diversity of intact, functional aquatic ecosystems. Of the 44 ADAs defined herein, 15 are selected as priority areas for conservation emphasis, including at least one from each of the three major drainage basins treated in this report. If it were possible to adequately protect these 15 ADAs, 96 of the 108 imperiled species listed in this report would be protected in at least one watershed, including all of the mussel species:

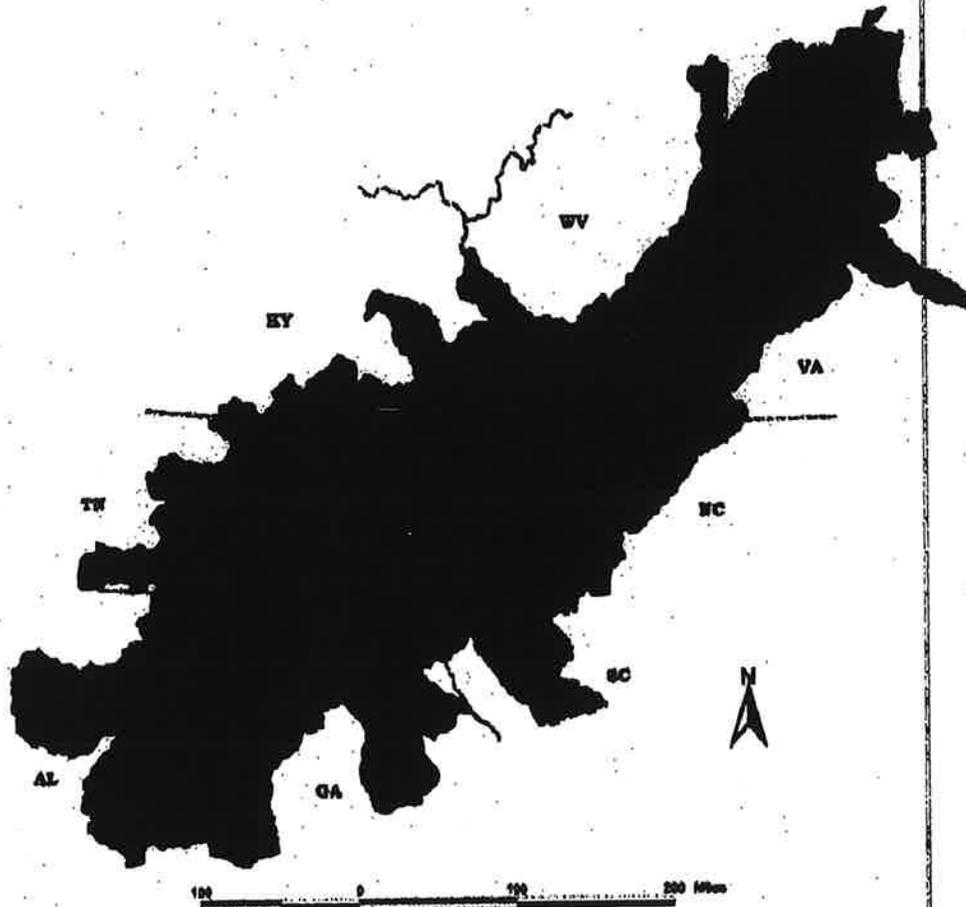
Choccolocco Creek, AL	Holston River, North Fork, TN and VA
Clinch River, TN and VA	Holston River, South Fork, TN and VA
Conasauga River, TN and GA	Nolichucky River, NC and TN
Coosawattee River, GA	Powell River, TN and VA
Craig Creek / Johns Creek, VA	Sipsey Fork / Black Warrior River, AL
Etowah River, GA	Tallapoosa River, AL and GA
(Lower) Hiwassee River, TN and NC	(Middle) and (Upper) Tennessee River, NC

The report also defines a set of 22 smaller Critical Refugia, which are described in more detail for their significance as sites of high fish diversity, endemic species richness, or their ecological identity as warm vs. coldwater streams. These places are then recommended for careful management to protect their special features, particularly through the process of national forest plan revision, now underway in the region. The Critical Refugia are found on these streams:

Betty Creek, GA and NC	Pedlar River, VA
Brasstown Creek, GA and NC	Poor Fork, Cumberland River, KY
Chattooga River, GA, NC and SC	Possum Creek, TN
Chauga River, SC	Shoal Creek, AL
Childers Creek, TN	South Toe River, NC
Citico Creek, TN	Stony / Little Stony Creeks, VA
Cowee Creek, NC	Suches Creek, GA
Holston River, VA	Tuckasegee River, NC
Linville River, NC	Vengeance Creek, NC
Little Tennessee River, GA and NC	Whitotop Laurel Creek, VA

Chances are, the battle for the conservation and restoration of our aquatic biodiversity will be won or lost on private lands. But our focus on the public lands is justified in part by the sheer cost of accomplishing conservation work. Our meager resources stand a realistic chance of making a real difference on the public forests. In addition, the data presented here make it clear that improving the management of the national forest lands will benefit habitats downstream, and some critical sites and species can be protected by focusing on improving national forest management. The timing of these recommendations is key, for the national forests in the region are now revising their management plans, and planners are in need of the kind of information offered in this rapid assessment.

Study Area for Protection of Aquatic Biodiversity

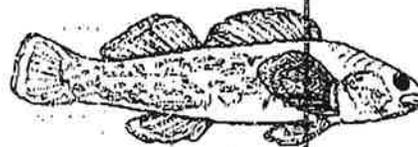


- State lines
- Watershed Divisions
- Aquatic Study Area

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COALITION



INTRODUCTION



THE SOUTHEASTERN UNITED STATES is recognized as a global center of aquatic biodiversity. The Southeast contains about 90 percent of the nearly 600 species of mussels and crayfishes, approximately 75 percent of the aquatic snails, and about half the freshwater fishes known from the continental United States (Shute et al, 1997). However, this remarkable natural heritage is at risk. Human beings are naturally biased in favor of affairs in the terrestrial world, but in fact, aquatic biodiversity is being lost at an even more rapid rate than terrestrial biodiversity. For fishes alone, it has been estimated that 28 percent of the known freshwater species in North America are extinct or in serious trouble. Stemming the tide of species loss in the region, as in other places, is a battle for ecological integrity at the landscape scale; for, as Warren and others note (1997), the process of extinction is not cataclysmic, but rather is incremental, often a result of cumulative, local and then regional extirpations that reflect a population's sensitivity to decreasing habitat and increasing isolation.

For the concerned citizen, what is at stake is not just a list of mysterious, arcane and unpronounceable critters that occupy unseen habitats below. Ultimately, the demise of our native species is a harbinger of our own future course. To cite just one example, our mountain streams provide drinking water to hundreds of communities downstream. If our native mussel species cannot survive the task of filtering the waters they have inhabited for millions of years, what expectations can we hold for our own sustainability?

This report focuses on the mountains of the region because it is here that our most natural landscapes, water quality, and public ownerships are found. The purpose of this report is to list and begin to prioritize stream reaches and their watersheds in order to develop strategies to protect aquatic biodiversity in and around the Southern Appalachian National Forests (primarily in the Southern Blue Ridge and Ridge and Valley Biogeographic Provinces, but including portions of the Appalachian Plateau and Piedmont Provinces as well). The task is timely, because the national forests of the region are presently revising the comprehensive land management plans that determine their future for the next 10-15 years. This is a once-in-a-decade opportunity to obtain substantial protection for the critical watersheds on public lands. Thus, identification and prioritization of streams for which the national forests play an ownership and management role is critical now. This identification is also important for project-level planning the forests perform in preparation for removing timber, building or obliterating roads, and carrying out other activities that can impact aquatic communities.

However, many of the stream reaches in this report extend well outside national forest ownership. This report should prove useful in prioritizing acquisition within Forest Service purchase units. The report also offers information and suggestions which should be useful for establishing conservation easements and riparian buffers on non-Forest Service land by other federal and state agencies and the conservation community after the forest planning process is completed.

This report is intended to be a rapid assessment; a tool to aid the protection of aquatic diversity in the region. It is hoped that the study this report represents will be developed and refined through future iterations. It is also hoped that other efforts to formulate protection strategies for aquatic systems will be encouraged by this report. This assessment covers the following national forests (NFs) and their watersheds:

Alabama: Talladega NF (Shoal Creek and Talladega Ranger Districts only) and Bankhead NF

Georgia: Chattahoochee NF

South Carolina: Sumter NF (Andrew Pickens Ranger District only)

North Carolina: Nantahala and Pisgah NFs

Virginia: Jefferson NF (Portions of the James River watershed in the George Washington NF are included in the areas proposed for protection, but were not reviewed in detail.)

Kentucky: Jefferson NF (not including the Redbird Purchase Unit of the Daniel Boone NF, administered by the Jefferson)

Tennessee: Cherokee NF