

**BUREAU OF LAND MANAGEMENT
SOUTHEASTERN STATES FIELD OFFICE
411 Briarwood Drive, Suite 404
Jackson, Mississippi 39206**

ENVIRONMENTAL ASSESSMENT (EA) FORM

ES-0020-2012-0075

PROJECT NAME: EOI #1597, Madison County, Mississippi Oil and Gas Lease

TECHNICAL REVIEW:

X	Program	Reviewer	Signature	Date
	Lands/Realty			
X	Environmental Justice	Gary Taylor NEPA Coordinator		
	Wild Horse & Burro			
	Communications (Dispatch)			
X	Cultural/Paleontology	John Sullivan Archeologist		
X	Native American Religious Concerns	John Sullivan Archeologist		
	Wilderness			
	Farmlands (Prime & Unique)			
X	Recreation	Gary Taylor NEPA Coordinator		
X	Visual Resources	Gary Taylor NEPA Coordinator		
	Operations			
	Fire Management			
	Range Management			
	Law Enforcement			
	Land Law Examiner			
X	Energy Policy	Brian Kennedy Physical Scientist		
X	Minerals	Brian Kennedy Physical Scientist		
	ACEC			
X	Surface Protection	Brian Kennedy Physical Scientist		
X	Hazardous Material	Brian Kennedy Physical Scientist		

X	Soils	John Sullivan Archeologist		
X	Air Quality	John Sullivan Archeologist		
X	Water Quality (Surface & Ground)	John Sullivan Archeologist		
	Water Rights			
	Floodplain			
X	Wetlands/Riparian Zones	Alison McCartney Natural Resource Specialist		
	Wild & Scenic Rivers			
X	Invasive & Non-Native Spp.	Alison McCartney Natural Resource Specialist		
X	Botanical including T&E Spp.	Alison McCartney Natural Resource Specialist		
X	Wildlife including T&E Spp.	Alison McCartney Natural Resource Specialist		

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United States Department of the Interior

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Environmental Assessment DOI-BLM-ES-0020-2012-0075-EA

EOI #1597, Madison County, Mississippi Oil and Gas Lease EA

Prepared by: John M. Sullivan
Date: September 27, 2012

CH 1 – PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Introduction

This environmental assessment (EA) is prepared to address a proposed federal oil and gas lease nomination in Madison County, Mississippi pursuant to the Minerals Leasing Act of 1920, as amended. A federal oil and gas lease is a legal contract that grants exclusive rights to the lessee to develop federally owned oil and gas resources. This lease will be a No Surface Occupancy (NSO) lease.

Need for the Proposed Action

The development of oil and natural gas is essential to meeting the nation's future needs for energy. Private exploration and development of federal oil and gas reserves are integral to the Bureau of Land Management's (BLM) oil and gas leasing programs under the authority of the Mineral Leasing Act 1920, as amended, the Mineral Leasing Act for Acquired Lands of 1947, as amended, the Federal Land Policy and Management Act of 1976 and the Energy Policy Act of 2005. The oil and gas leasing program managed by BLM encourages the development of domestic oil and gas reserves and reduction of U.S. dependence on foreign sources of energy. The tract considered for lease in this analysis was nominated by an Expression of Interest (EOI) from private industry.

The BLM, Southeastern States Field Office (SSFO) received a request from the BLM Eastern States Office for a National Environmental Policy Act (NEPA) analysis report on 350 acres of land with the following legal description: T7N, R2E, Sec's. 11, 12, 13, 14 and 23 described by metes and bounds, Madison County, Choctaw Meridian, Mississippi. The nominated parcel is located on privately owned land.

Management Objectives of the Action

The objective of the proposed action is to make available for lease 350 acres in Madison County, Mississippi to provide exclusive rights to the lessee to develop federally owned gas resources, carbon dioxide (CO₂). The development of federal minerals would create royalties to the federal government and protect said minerals from being drained from private development. Also to protect environmental concerns and cultural resources this lease will be offered as an NSO lease.

Land Use Plan Conformance

The Resource Management Plan (RMP) / Final Environmental Impact Statement (EIS) for Alabama and Mississippi, approved January 26, 2009, did not address CO₂ extraction. The proposed action does not conflict with any known State or local planning, ordinance or zoning. According to the regulations at 43 CFR 1610.8 (b) (1), however, this environmental assessment will be used as a basis for making a decision on the proposal.

Applicable Regulatory Requirements and Required Coordination

Applicable Regulatory Requirements and Required Coordination include: The Mineral Leasing Act, as amended and supplemented (30 U.S.C. 181), The Mineral Leasing Act of 1947, as amended (30 U.S.C. 351-359), Leasing Reform Act of 1987, 43 CFR 3162.3, 43 CFR 3162.5, Onshore Oil & Gas Order No. 1, Energy Policy Act of 2005, National Environmental Policy Act, 1969 (NEPA), The National Historic Preservation Act, The American Indian Religious Freedom Act, The Native American Graves Protection and Repatriation Act, E.O. 13007, and/or other statutes and executive orders.

The following agencies/tribes were contacted for consultation and cultural compliance under Section 106:

- Mississippi Band of Choctaw Indians
- Choctaw Nation of Oklahoma
- Jena Band of Choctaw
- Alabama-Quassarte Tribal Town
- Muscogee (Creek) Nation of Oklahoma
- Seminole Nation of Oklahoma
- Poarch Band of Creek Indians
- Alabama-Coushatta Tribe of Texas
- Coushatta Indian Tribe
- Chitimacha Tribe of Louisiana
- Seminole Tribe of Florida
- Kialagee Tribal Town
- Thlopthlocco Tribal Town
- Mississippi Department of Archives and History, (MDAH); Jackson, Mississippi

The following BLM employees attended the onsite visit August 10, 2012 for proposed EOI:

- (1) Brian Kennedy, SSFO Physical Scientist
- (2) John Sullivan, SSFO Archeologist
- (3) Gary Taylor, Planner & Environmental Coordinator

Decision(s) That Must Be Made

There are two decisions under consideration from the BLM for the proposed action. The first is to offer the federal oil and gas mineral estate as a “No Surface Occupancy” for competitive leasing. The other decision would be to deny the action so that no development and surface disturbance would take place, the “No Action” option. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the proposed action. BLM’s policy is to promote oil and gas development as long as it meets the guidelines and regulations set forth by the National Environmental Policy Act of 1969 and other subsequent laws and policies passed by the U.S. Congress.

CH 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

Introduction

A tract of land has been nominated for a federal oil and gas lease in Madison County, Mississippi. A federal oil and gas lease is a legal contract that grants exclusive rights to the lessee to develop oil and gas resources that may exist on split estate property.

Location

Legal description for the nominated parcel is:

EOI # 1597 - T7N, R2E, Sec's. 11, 12, 13, 14 and 23 described by metes and bounds, Madison County, Choctaw Meridian, Mississippi (350 acres)

Proposed Action

The BLM, SSFO has received a nomination or EOI, to lease 350 acres of federal mineral estate for CO₂ extraction in Madison County, Mississippi. This lease would give the lessee exclusive rights to explore and develop the CO₂ reserves on the lease, but does not in itself authorize surface disturbing activities. This competitive lease provides exclusive rights to develop the federal oil and gas resources, in this case federal CO₂, but does not obligate the company to drill a well on the federal mineral estate. The lease can be used to consolidate acreage to meet well spacing requirements, and/or the mineral estate may be acquired for speculative value. The BLM will require applicants to adhere to stipulations and lease notices/best management practices for gas wells (Appendix B). The attached stipulations and lease notices/best management practices have been formulated while conducting our impact analysis and are made part of the proposed action.

The proposed nominations, if approved, would be offered for competitive sale with stipulations and notices generated through this and other consultations, as well as the National Environmental Policy Act (NEPA) process. Once awarded, the successful bidder is required to submit an Application for Permit to Drill (APD) to the BLM before any ground disturbance is authorized. In the APD, the successful bidder of the EOI will identify a proposed drill site and provide the BLM with specific details on how and when they propose to drill the well within the constraints of the lease document. Upon receipt of an APD, BLM conducts an onsite inspection with the successful bidder, and when possible the private land owner or surface managing agency. NEPA requirements must be met in the APD process along with other Federal policies and regulations that apply.

Typically, after approval of an APD, the petroleum industry follows a general plan and process for all proposed drill sites, as follows:

Preparation for the drilling process includes construction of a road, drilling pad, and reserve pit. Constructed access roads normally have a running surface width of approximately 30 feet; the length is dependent upon the well site location in relation to existing roads or highways. The average length of road construction will be about 0.5 miles; therefore, about 2 acres would be affected by road construction. Typically 2.5 acres are cleared and graded level for the

construction of the drilling pad for a well. If the well is productive with gas, and the flowline is in the road, it is estimated that another 0.5 acres may be affected by flowline construction. The total disturbed area for drilling a productive well would be approximately 5 acres. These disturbances are typical for private or Federal Ownership well locations. The excavation reserve pit is usually about five feet deep and is lined with bentonite clay to retain drilling fluids, circulated mud, and cuttings. Plastic or butyl liners (or its equivalent), that meet state standards for thickness and quality, are used on occasions when soils are determined incapable of holding pit fluids.

Because of the cost of the drilling rig, drilling usually continues around the clock. Wells in this area are usually drilled in 30 days. Once drilling is completed, excess fluids are pumped out of the pit and disposed of in a state authorized disposal site. During well pad construction, the topsoil is stockpiled to be used during restoration activities. If the well is successful, the drill pad would be reduced to about 100' x 100' with the remaining surface area, including the reserve pit, re-graded and restored as per the BLM and surface owner requirements. A lease condition is subject to Federal regulations for restoration and rehabilitation.

No Action

Under the No Action Alternative, the request to offer the proposed tract for oil and gas lease would be denied. Without the proposed Federal lease the potential exists for drainage of the Federal mineral estate. Potential economic benefits of production from this lease would be jeopardized.

CH. 3 – DESCRIPTION OF THE AFFECTED ENVIRONMENT

Introduction

Based on review of the elements listed on the SSFO NEPA Form and consideration of the Purpose and Need statement prepared for this EA, the following elements will be addressed in this EA: Environmental Justice, Cultural/Paleontology, Native American Religious Concerns, Recreation, Visual Resources, Minerals, Energy Policy, Surface Protection, Hazardous Material, Soils, Air Quality, Floodplain, Water Quality, Wetlands/Riparian Zones, Invasive & Non-Native Spp., Botanical including T&E Spp., and Wildlife including T&E Spp.

Description of Project Area

EOI #1597 is located in Madison County, within the metropolitan Jackson area of Mississippi. The Natchez Trace Parkway, managed by the National Park Service is also located nearby the proposed lease. The lease area encompasses approximately 350 acres within the along and the Ross Barnett Reservoir, owned and managed by the Pearl River Valley Water Supply District (PRVWSD). The PRVWSD is a private company, established in 1958 and incorporated in Mississippi, categorized under Impounding Reservoir, Irrigation. The PRVWSD manages and controls the Ross Barnett Reservoir, a forty five mile long body of water near Jackson MS that widens to 3.5 miles at its broadest point and includes 105 miles of shoreline. The district's

project area is defined as the physical location of the reservoir, dam and related facilities which includes an area of one quarter mile from the shoreline of the reservoir at high water.

Topography of the area includes upland ridges, intermittent streams, small freshwater marshes, shoreline interface with the reservoir, and open water. Roughly 35% of the total area is under the reservoir. Of the 65% on land, roads, residential, commercial, and industrial areas occupy roughly 18% of the area adjacent to the reservoir. Roughly 50% of the reservoir is adjacent to the Natchez Trace Parkway, although the proposed lease is not within the Natchez Trace Parkway property.

Air Quality

The Clean Air Act of 1970, as amended, requires the establishment of National Ambient Air Quality Standards (NAAQS). Both primary and secondary standards are now in effect. Primary standards define levels of air quality that the Administrator of the Environmental Protection Agency (EPA) judges to be necessary, with an adequate margin of safety, to protect the public health. Secondary standards define levels of air quality that the Administrator of the EPA judges to be necessary to protect the public from any known or anticipated adverse effects of a pollutant. The NAAQS pollutants are monitored by the Mississippi Department of Environmental Quality (MDEQ). These include carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, total suspended particulate, particulate matter less than 10 microns, and lead. Ambient air quality measurements taken by the Mississippi Division for Environmental Quality (MDEQ) indicate that ambient air quality is within the standards.

Environmental Justice

Title IV of the Civil Rights Act of 1964 and related statutes ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal assistance on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898 on Environmental Justice directs that programs, policies, and activities not have a disproportionately high and adverse human health and environmental effect on minority and low-income populations.

One neighborhood is located within the tract boundary. Lost Rabbit subdivision, located on the western shore of the reservoir in Madison County, "high end" residential development which is largely undeveloped lots, a few homes and a marina.

Cultural Resources

There are known historic properties (36 CFR 800.16(1)) documented on the tract. These National Register of Historic Places (NRHP) properties are associated with prehistoric and historic Native Americans and the Natchez Trace Parkway. The BLM conducted consultation with Native Americans on this action and that a NSO is the only option for this lease. However, the BLM does not have primary jurisdiction over the adjacent surface involved.

Native American Religious Concerns

There are known prehistoric and historic properties (36 CFR 800.16(l)) documented on the tract associated with Native American activity. It is not known if religious practices have been located within the boundaries of proposed disturbance. The BLM has conducted consultation with Native Americans on this undertaking and that a NSO is the only option for this lease. However, the BLM does not have primary jurisdiction over the adjacent surface involved. The BLM also has no authority to allow or disallow persons on the adjacent surface involved in this action.

Recreation/Visual/Noise Resources

Boating, fishing and some hunting are the normal outdoor recreation activities for this area. Ross Barnett Reservoir has abundant recreational resources and land available to accommodate these types of activities. However, access to these recreational resources cannot adequately be limited due to access from the reservoir.

The visual resources found in the project area consist of water, wooded areas, marina and urban type setting. The existing visual resources in the immediate vicinity of the proposed actions have more of a rural appearance even though of its close proximity to the city of Madison and the Jackson Metro area of Mississippi. Existing sources of noise are boat traffic and/or private landowners nearby.

Energy Policy

As manager of more public land than any other Federal agency, the Bureau of Land Management has a key role in implementing the Energy Policy Act of 2005. The BLM's management of 256 million surface acres and 700 million subsurface acres of mineral estate provides for multiple uses of the land, including energy development.

The area contains no features related to energy development, production, supply or distribution.

Wastes, Hazardous or Solid

During the on-site inspections, no hazardous or solid waste disposal sites were found on the proposed lease tract. There is some littering from the public scattered thru out the tract.

Soils

The soil type associated with the project area according to the Natural Resource Conservation Service (NRCS) the soils include Byram, Calloway, Loring, Oklimeter, Providence, Lexington, Riedtown, Silwell, and Smithdale series. All of these soils are silt loam with slopes between 1 and 12% slopes. Most soils formed on alluvium or loess deposits.

Water Quality, Surface/Ground

Surface Water Quality

The Ross Barnett Reservoir, located just north of Jackson, Mississippi, is a 13,400 hectare (33,000 acre) freshwater impoundment that serves as the primary drinking water supply for the City of Jackson and the Pearl River Valley Water Supply District. Ross Barnett Reservoir is part of the Pearl River Basin. Extending from its headwaters in Neshoba County through the Jackson metropolitan area and empties into the Mississippi Sound.

The Reservoir is surrounded by over 4,600 residential homes and providing recreation in numerous forms such as fishing, boating, camping, and trail systems, the reservoir is the largest surface water impoundment in Mississippi.

Ground Water Quality

Almost all of the surficial aquifers supply water of good to very good quality, ranging from calcium-bicarbonate to sodium-bicarbonate water types. Areas of poor water quality can result from both natural and anthropogenic sources. Natural sources of contamination are typically regional in extent and are related to water-rock interactions. Anthropogenic impacts include both point and nonpoint sources of contamination. Nonpoint sources can result in large areas of impact, although contaminant concentrations typically are significantly lower than point sources, and the contaminants typically represent soluble, non-reactive species. Point sources of contamination often result in elevated levels of contaminants that exceed federal maximum contaminant levels; however, the extent of contamination normally is confined to a small area, with little to no offsite migration or impact on receptors.

Wetlands/Riparian Areas/Floodplains

The project area is within the Pearl River valley. Surrounding the proposed lease area is farmland, timber production and the Reservoir. Drainage is usually north to south. The lease area is on level topography to rolling hills except for that part with in the Reservoir.

Invasive/Exotic Species

The NRCS lists the following plants as noxious weeds in Mississippi: Hydrilla (*Hydrilla verticillata*), Brazilian satintail (*Imperata brasiliensis*), cogongrass (*Imperata cylindrica*), kudzu (*Peuraria montana*), itchgrass (*Rottboellia cochinchinensis*), giant salvinia (*Salvinia molesta*), tropical soda apple (*Solanum viarum*), and Chinese tallow tree (*Sapium sebiferum*). Few Chinese tallow trees were observed in the EOI. Surface disturbing activities have the potential to introduce or promote the spread of invasive, non-native plant species.

Potential impacts are dependent on the prevalence of invasive species within the project area and species planted during restoration activities and the management of the site during and following restoration. Most restoration activities include non-native grasses, such as annual ryegrass (*Lolium sp.*) during the winter months and Bahia (*Paspalum notatum*) or Bermuda grass (*Cynodon dactylon*) during the summer months to provide cover for disturbed soil areas. If these areas are mowed following abandonment, these non-native grasses are expected to persist and

dominate the site. Implementation of best management practices to reduce possible introduction and selection of comparable native cover species will minimize these affects.

Special Status Species

Three species are listed on the U.S. Fish and Wildlife Service's 2010 List of Federally Threatened and Endangered Species in Madison County, Mississippi: Louisiana black bear (*Ursus a. luteolus*), Ringed Map Turtle (*Graptemys oculifera*), and Rabbitsfoot Mussel (*Quadrula cylindrica*).

The black bear typically inhabits mature hardwoods and/or river basin bottomland hardwood forests with minimal human disturbance and low open road density. The U.S Fish and Wildlife Services Recovery Plan for the Louisiana black bear states that, "although black bears originally occurred throughout the lower southeastern coastal plain, bear densities were probably historically greater within bottomland hardwood and other forested communities where hard and soft mast production was higher than in the fire-maintained, pine-dominated communities." Due to a lack of suitable habitat for black bears on the proposed project site, BLM has concluded with a "no effect" determination for this species for the proposed project.

The Ringed Map Turtle current, numerous basking logs, nearby sand and gravel bars. Typically not found in tributaries or tidal areas, but has been observed in cypress swamps associated with the Pearl River. Sandy beaches or gravel bars are necessary for nesting. High water quality is necessary to support their main food sources (insects, mollusks, and crustaceans). This species is known to occur in the Pearl River.

High potential habitat, as described above, does not occur within the EOI. No ringed map turtles were observed within the EOI. Surveys were limited to shoreline observations, and aquatic surveys were not conducted because results would not change the effects determination. Activities associated with oil/gas exploration would not occur within streamside zones or riparian areas. Standard conditions including buffers between the proposed limits of clearing and streamside zones, and erosion control measures would minimize runoff towards aquatic habitats.

The Rabbitsfoot Mussel habitat is small to medium rivers with moderate to swift currents. In smaller streams it inhabits bars of gravel and cobble close to the fast current. It is found in medium to large rivers in sand and gravel, in depths up to 3 m (NatureServe 2012). No suitable habitat for this species occurs within the proposed EOI.

In addition to the federal listed species the Mississippi Natural Heritage Program (MNHP) lists (16) sixteen rare species within Madison County. Only those species that have potential to occur in the habitat types observed within the project area have are included here. The MNHP list for Madison County (<http://museum.mdwfp.com/science/nhp.html>), and NatureServe Explorer were accessed to determine distribution, occurrence, and habitat suitability of rare species within the project area. Southern crawfish frogs (*Rana areolata*), Cooper's Hawk (*Accipiter cooperii*), Peregrine Falcon (*Falco peregrinus*), Bald Eagle (*Haliaeetus leucocephalus*), Black Rail (*Laterallus jamaicensis*), Osprey (*Pandion haliaetus*), Bewick's wren (*Thryomanes bewickii*).

The Southern crawfish frog occurs in a variety of wet habitats including open wet woodlands, wooded valleys, prairies, river floodplains, pine forests, meadows, and pastures; occasionally in woodland stream watersheds and river floodplains. Suitable habitat for this species occurs in the EOI.

Cooper's hawk is a resident species that nests and forages primarily in mature hardwood deciduous woodlands, but will also utilize mixed pine-hardwoods and pine forests. They typically build new nests each season in the canopy, but may also re-use old nests or squirrel nests. Suitable habitat for this species occurs within the EOI.

Peregrine falcons are migrant wintering species in Mississippi along the Gulf coast and inland near large water bodies where they prey on shore bird species. Limited habitat for this species occurs in the Ross R. Barnett Reservoir though the potential exists for this species to occur in the EOI as a non-nesting migrant.

The Bald Eagle was federally listed as endangered until 2007, when it was de-listed due to recovery. Bald eagles remain protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles winter (October through May) in the south, inhabiting woodlands along coastal areas, inland lakes and large rivers. Bald eagles utilize large bald cypress, mature pine and sometimes oak species for nesting and also as loafing and feeding platforms. Typically, eagles nest in large trees within ¼ to ½ mile inland water bodies.

Potential suitable nesting habitat occurs within the EOI in the forested shoreline areas adjacent to the Ross R. Barnett Reservoir. However, the EOI is in an area with high human impacts and activity which decreases the likelihood eagles would occupy the area.

The Black Rail is a secretive and reclusive rail species nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation. Potential suitable habitat for this species occurs within the marsh areas.

Ospreys, large fish-eating hawks, which inhabit areas near large inland water bodies and rivers, construct large conspicuous stick nests in the open on poles, channel markers, and dead trees, often over water. Potential foraging areas occurs within the EOI for Ospreys.

Bewick's wrens favor dry brushy areas, chaparral, scrub, thickets in open country, and open woodlands near rivers and streams. They also occur in gardens, residential areas, and parks in cities and suburbs. Suitable habitat occurs within the EOI.

Wildlife and Vegetation

In general, the dominant habitat on shore can be classified as upland mixed pine-hardwoods and urban forest. The forested tracts throughout the EOI are extremely dense, with thick understory and midstory to canopy height. Dominant canopy species are: white oak (*Quercus alba*), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), pignut hickory (*Carya glabra*), and American holly (*Ilex americana*). Mid-story and understory species include hawthorns (*Crataegus* spp.),

elderberry (*Sambucus canadensis*), American beautyberry (*Callicarpa americana*), blackberry (*Rubus* spp.), yaupon (*Ilex vomitoria*), deciduous holly (*I. decidua*), poison ivy (*Toxicodendron radicans*), *Smilax* spp., muscadine (*Vitis* spp.), and bamboo species.

Animal species observed are: gray squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*) (sign), raccoon (*Procyon lotor*) (sign), nine-banded armadillo (*Dasypus novemcinctus*), American alligator (*Alligator mississippiensis*), and five-lined skink (*Eumeces fasciatus*).

Upland pine, mixed pine-hardwoods, riparian and shoreline zones such as that in the project area provide habitat for numerous migratory and resident bird species including raptors, upland game birds, songbirds and woodpeckers. Birds observed include: red-shoulder hawk (*Buteo lineatus*), red-tail hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), black vulture (*Coragyps atratus*), turkey vulture (*Cathartes aura*), red-eyed vireo (*Vireo olivaceus*), American crow (*Corvus brachyrhynchos*), Carolina wren (*Thryothorus ludovicianus*), house sparrow (*Passer domesticus*), brown-headed cowbird (*Molothrus ater*), European starling (*Sturnus vulgaris*), Carolina chickadee (*Parus carolinensis*), northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalus cardinalis*), American robin (*Turdus migratorius*), eastern kingbird (*Tyrannus tyrannus*), Eastern wood pe-wee (*Contopus virens*), red-headed woodpecker (*Melanerpes erythrocephalus*), killdeer (*Charadrius vociferus*), cattle egret, (*Bubulcus ibis*), and great-blue heron (*Ardea herodias*).

Urban forest, upland forests and forested areas in close proximity to aquatic habitat such as that in the EOI provide habitat for numerous invertebrate species. Such habitat supports a variety of butterfly and moth species including swallowtails (*Papilionidae*), skippers, (*Hesperiidae*), sulphurs (*Pieridae*) hairstreaks (*Lycaenidae*), and the sphinx moths (*Sphingidae*). Beetles (Coleoptera), wasps, bees (*Bombiliidae*), horseflies (*Tabanidae*) spiders (*Arachnidae*) and numerous others would also be expected to occur in the area. Insect species observed are: tiger swallowtail (*Papilio glaucus*), pipevine swallowtail (*Battus philenor*), giant swallowtail (*Papilio cresphontes*), red admiral (*Vanessa atalanta*), buckeye butterfly (*Junonia coenia*), southern dogface butterfly (*Colias cesonina*), and dragonfly species.

Aquatic surveys were not conducted because oil/gas exploration would not impact aquatic habitats within the EOI. No streamside zones, riparian areas, or open water habitat would be impacted by the proposed oil/gas extraction. Standard conditions including buffers between the proposed limits of clearing and streamside zones, and erosion control measures would minimize runoff towards aquatic habitats.

Migratory Bird Species of Concern

EOI 1597 contains a variety of habitats suitable for migratory bird species including upland forested areas, urban forests, pastures, riparian corridors, and the shoreline interface along the Ross R. Barnett Reservoir. Any clearing activities would reduce foraging and potential nesting habitat. Clearing activities during nesting season may adversely affect nesting birds. Should clearing activities occur during nesting season, site specific surveys would be necessary to determine impacts to migratory songbird habitat.

Ch. 4 - ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

Introduction

This chapter assesses potential environmental consequences associated with direct, indirect, and cumulative effects of the Proposed Action and alternatives.

Based on review of the elements listed on the SSFO NEPA Form and consideration of the Purpose and Need statement prepared for this EA, the following elements will be addressed in this EA: Environmental Justice, Cultural/Paleontology, Native American Religious Concerns, Recreation, Visual Resources, Energy Policy, Minerals, Surface Protection, Hazardous Material, Soils, Air Quality, Water Quality, Floodplain, Wetlands/Riparian Zones, Invasive & Non-Native Spp., Botanical including T&E Spp., and Wildlife including T&E Spp.

Environmental Justice

There is no adverse human health and environmental effects anticipated from potential development on minority and low-income populations in the areas surrounding this tract.

Cultural Resources and Native American Religious Concerns

Cultural resource surveys have been conducted and leasing of the tract will be a no surface occupancy lease, therefore direct impacts may not occur on the lease area, thus avoiding cultural resources and potentially sacred Native American religious sites due to ground disturbance. Direct impacts are those such as completely destroying a site by bulldozing the area and workers picking up artifacts. Indirect impacts are those such as erosion or compaction of the soil on the site. However, if sites are located and recorded before ground disturbance begins, these impacts can be avoided or mitigated.

A stipulation regarding cultural resources and Native American religious concerns applies to this lease (Appendix B) and is applicable for all the proposed parcels, a NSO lease. The stipulation states that the BLM will not approve any ground disturbing activities that may affect historic properties and/or resources until it completes its obligations under applicable requirements of the National Historic Preservation Act and other authorities. If currently unknown burial sites are discovered during development activities associated with this lease, these activities must cease immediately, applicable law on unknown burials will be followed and, if necessary, consultation with the appropriate tribe/group of federally recognized Native Americans will take place.

Recreation/Visual/Noise Resources

The proposed lease area is used for recreational purposes, predominantly fishing with some hunting by the public. Residences and the public in the area are not accustomed to seeing oil and gas activity on or near the reservoir. Because hunting is regulated by the state of Mississippi, and wild game in Madison County is plentiful, hunting activities occur only at certain times of the year for each game species by state law. Cumulative impacts to hunting wild game in this area would not occur.

Invasive/Exotic Species

Surface disturbing activities have the potential to introduce or promote the spread of invasive, nonnative plant species. Impacts are dependent on the species planted during restoration activities and the management of the site during and following restoration. Revegetating areas after soil disturbance with competitive grasses greatly reduces the ability for invasive species to take hold in an area. The Natural Resources Conservation Service recommends the mixture below for revegetation efforts in Louisiana:

Blend #1 LA (weight in pure live seed or PLS lb/ac)

- Switchgrass 60% = 2.4 lb
- IL Bundleflower 20% = 2.4 lb
- Partridge Pea 15% = 1.2 lb
- Black-eyed Susan 3% = .03 lb
- Plains Coreopsis 2% = .02 lb

A lease condition regarding invasive/exotic species applies to this lease (Appendix B) and is applicable for the proposed parcel. The lease notice states that the use of native or non-invasive plants in seeding mixtures will be encouraged to stabilize disturbed areas and during restoration activities. Construction sites will be surveyed for invasive species prior to ground disturbance. If invasive species are found, the proper control measures will be used to either eradicate the species from the area or minimize its spread to other areas.

Soils

If the proposed lease is awarded to successful bidder the following are typical activities that would result from oil and gas extraction. Construction of access roads have direct impacts to soils. These impacts would be limited to those areas where vegetation is removed and construction occurs. The direct impacts would be of two types: (1) physical removal, leveling and mixing of surface soils and (2) soil compaction. The first impact would be caused by site preparation for construction of the well pad, related structures, road construction, flowline construction and wind and water erosion after vegetation is removed. This would cause a mixing of soil horizons and cause a short term loss of soil productivity. The second impact, soil compaction, would be caused by vehicle and machinery travel. Compaction decreases air and water infiltration into the soil profile thus reducing soil productivity. The indirect impact would be that of erosion and siltation of drainages and streams. Prompt cultivation and re-vegetation of impacted soil areas should reduce the possibility of soil erosion thus preventing an increase of siltation into drainages or streams from run-off.

Special Status Species

No special status species are known or expected to occur at this site, due to a lack of suitable habitat so impacts from potential development will not occur. Stipulations and lease notices regarding endangered species apply to this lease (Appendix B) and are applicable for the nominated parcel. The stipulation states that the BLM may recommend modifications to exploration and development proposals to further the conservation and management objectives

for threatened, endangered, or other special status plant or animal species or their habitat to avoid BLM-approved activity that would contribute to a need to list such a species or their habitat. The lease notice gives recommendations for disposing produced water in such a way as to protect aquatic habitats for and to avoid potential impacts to special status fish, mussels, turtles, snails, plants, and migratory birds.

To protect threatened, endangered, candidate, proposed, and BLM sensitive plant species a second stipulation applies to this lease and applies to the proposed parcel. The stipulation states that all suitable special status plant species habitat will be identified during environmental review of any proposed surface use activity. If field examination indicates that habitat of one or more of these species is present, the BLM will require a survey by a qualified botanist for special status plants during periods appropriate to each species. Operations will not be allowed in areas where sensitive plants would be affected.

Migratory Bird Species of Concern

Nesting and foraging habitat for birds will be altered dramatically if forests are cut for oil and gas development. Many of the species with the potential to occur on this tract could move to similar habitats in surrounding areas. After the well is put into production and during reclamation activities bird species diversity would be altered depending on successional stage of the site and adequacy of restoration efforts.

To protect perch and roosting sites and terrestrial habitats for and to avoid potential impacts to migratory birds and federally listed wildlife a lease notice applies to this lease and applies to all proposed parcels. The lease notice provides recommendations regarding reserve pits, maximum design speeds for roads, and powerline construction to minimize effects on migratory birds.

Wildlife and Vegetation

There are a variety of species occurring on the lease tract with broad habitat requirements. The proposed lease will not affect those habitat areas. If any development of the proposed lease occurs, wildlife usage of the surrounding area would continue with little to no interruption.

Wastes, Hazardous or Solid

If the EOI is leased, drilling operations would typically generate the following wastes; (a) discharge of drilling fluids and cuttings into the reserve pits; (b) wastes generated from used lubrication oils, hydraulic fluids, and other fluids used during production of oil and gas, some of which may be characteristic or listed hazardous waste; and (c) service company wastes from exploration and production activities as well as containment of some general trash. Certain wastes unique to the exploration, development, and production of crude oil and natural gas have been exempted from Federal Regulations as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA) of 1976. The exempt waste must be intrinsic to exploration, development or production activities and is not generated as part of a transportation or manufacturing operation. The drilling fluids, drill cuttings, and produced waters are classified as a RCRA exempt waste, and the proposed action would not introduce hazardous substances

into the environment if they are managed and disposed of properly under Federal, State, and local waste management regulations and guidelines.

Water Quality, Surface/Ground

Construction would cause some minor erosion and re-deposition of soil a short distance away from the construction area. Improper casing and/or cementation can result in contamination of ground water aquifers. The BLM requires that the operator must isolate freshwater-bearing formations and other usable water containing 10,000 ppm or less of total dissolved solids (TDS) and other mineral-bearing formations and protect them from contamination by using proper casings. In addition, the BLM requires lining the reserve and water pit with a suitable liner on a case-by-case basis.

Wetlands/Riparian Areas/Floodplains

The propose lease area is mostly within the Ross Barnett Reservoir. The tract will be offered as a NSO lease, and disturbances are not permitted within 250 feet of streams, rivers, wetlands or springs.

Cultural Resources

If the area is not leased and cultural resource surveys are not conducted, direct and indirect impacts may occur. Direct impacts are those such as completely destroying a site by “relic hunters” or by people picking up artifacts. Other direct impacts may be the mixing of layers in a site by plowing or the destruction of a site by land leveling. Indirect impacts are those such as after timber thinning or clear-cutting erosion of the remains of a site. Hunting activities may cause other impacts to the surface such as the deposition of spent ammunition shells and other items. However, the use of the property is the purview of the land owner, and any cultural resource site and its artifacts are the property of the land owner.

Native American Religious Concerns

Under this alternative, places of Native American Religious Practice could be impacted by activities of the landowner, unless there was a formal agreement between the landowner and the Native American tribe. However, the use of the property is the purview of the land owner, and any cultural resource and/or Native American Religious sites are the property of the land owner.

Energy Policy

Energy Policy Act of 2005 – Sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

Title III: Oil and Gas

Subtitle B: Natural Gas

(Sec. 313) Designates FERC as the lead agency for coordinating federal permits and other authorizations and compliance with the National Environmental Policy Act of 1969 (NEPA). Directs FERC to establish a schedule for all federal authorizations.

Subtitle C: Production

(Sec. 322) Amends the Safe Drinking Water Act to exclude from the definition of underground injection the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil or gas, or geothermal production activities.

Subtitle F: Access to Federal Lands

(Sec. 361) Requires the Secretary of the Interior to perform an internal review of current federal onshore oil and gas leasing and permitting practices.

(Sec. 364) Amends the Energy Act of 2000 to revise the requirement that the Secretary of the Interior, when inventorying all onshore federal lands, identify impediments or restrictions upon oil and gas development.

(Sec. 366) Amends the Mineral Leasing Act to set deadlines for an expedited permit application process.

(Sec. 368) Prescribes guidelines governing energy right-of-way corridors on federal land. Directs the Secretaries of Agriculture, of Commerce, of Defense, of Energy, and of the Interior (the Secretaries), in consultation with FERC, states, tribal or local government entities, affected utility industries, and other interested persons, are directed to consult with each other and to: (1) designate corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on federal land in the 11 contiguous Western States; (2) incorporate the designated corridors into the relevant energy land use and resource management or equivalent plans; and (3) ensure that additional corridors are promptly identified and designated.

(Sec. 371) Amends the Mineral Leasing Act to cite conditions for the reinstatement of oil and gas leases terminated for certain failure to pay rentals.

Subtitle G: Miscellaneous

(Sec. 390) States that action by the Secretary of the Interior in managing the public lands, or the Secretary of Agriculture in managing National Forest System Lands, with respect to certain oil or gas drilling related activities shall be subject to rebuttable presumption that the use of a categorical exclusion under NEPA would apply if the activity is conducted pursuant to the Mineral Leasing Act for the purpose of exploration or development of oil or gas.

No Action

Under this alternative, the parcels within the proposed action would remain unleased. It could be offered for leasing in the future, but may be subject to additional environmental analysis. If the parcels were not leased there would be no direct or indirect impacts to the environment and therefore no effects on all of the critical elements including Cultural Resources and Native American Religious Concerns.

Cumulative Impacts

Cumulative impacts are the impacts to the environment resulting from any incremental actions including other past, present, and reasonable foreseeable future actions. Since the proposed action would not authorize surface occupancy, no environmental impacts are anticipated on the proposed lease. Hence, the proposed action will not contribute to cumulative.

List of Preparers

Specialist Name

Brian Kennedy
Alison McCartney
John Sullivan
Gary Taylor

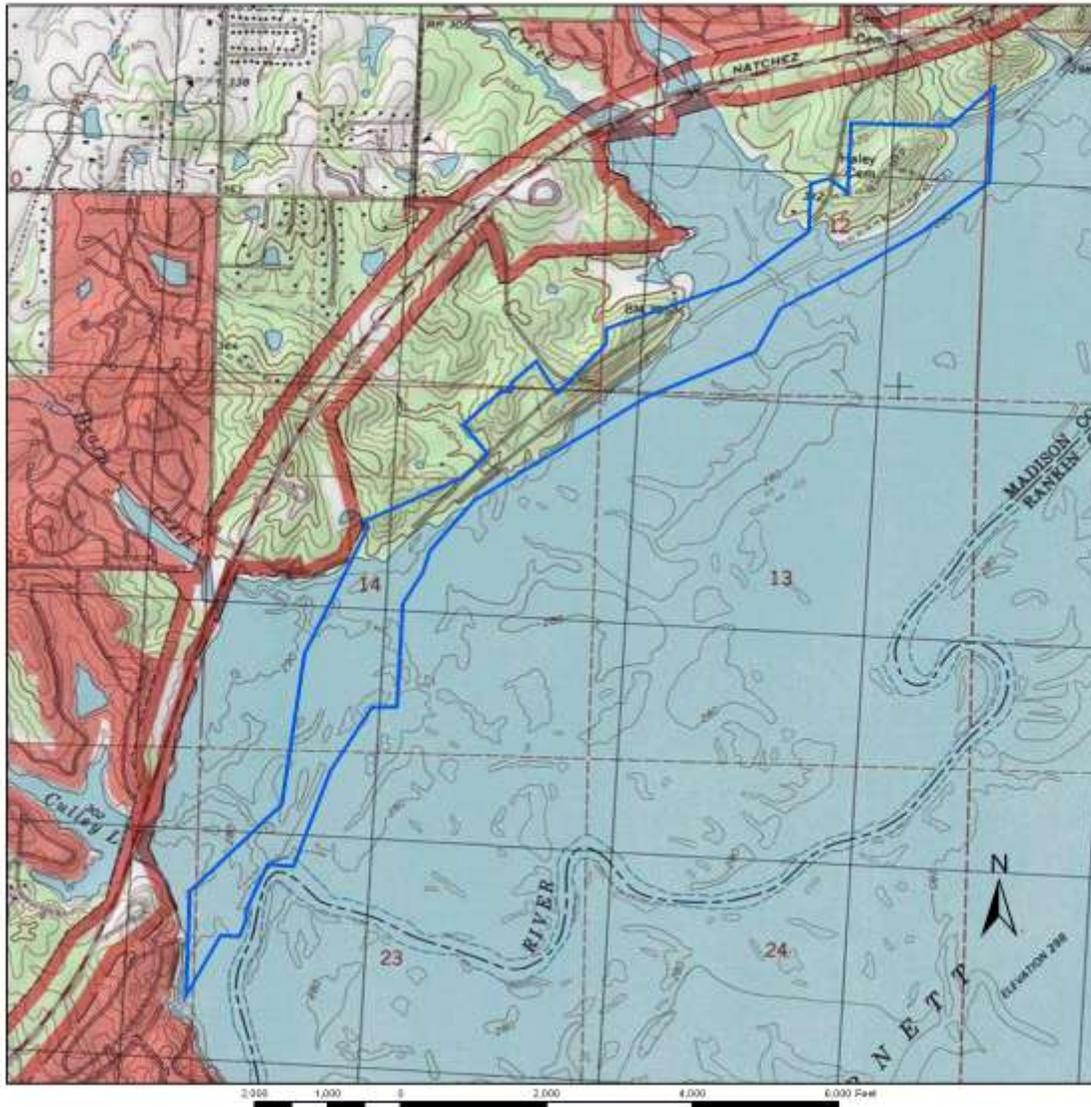
Title, Organization

Physical Scientist, BLM
Natural Resource Specialist, BLM
Archaeologist, BLM
Planning and Environmental Coordinator, BLM

APPENDIX A

Maps

Proposed Federal Oil and Gas Lease EOI 1597



 Proposed Lease Area

The proposed lease area:
Madison County, Mississippi, Choctaw Meridian
T. 7N., R. 2E.
Metes & bounds description within sections
11, 12, 13, 14, and 23
Approximately 350 acres.

**U.S. Department of the Interior
Bureau of Land Management
Eastern States
Southeastern States Field Office
Jackson, Mississippi**

This map contains portions of the following USGS 1:24,000 Topographic Quadrangle: Madison

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual use or aggregate use with other data.

APPENDIX B

Lease Stipulations and Conditions of Approval

Legal Description: T7N, R2E, Sec's. 11, 12, 13, 14 and 23 described by metes and bounds, Madison County, Choctaw Meridian, Mississippi (350 acres).

1. This tract is offered as a No Surface Occupancy (NSO) lease.

Exception: None

Modification: None

Waiver: None

2. In order to protect unknown cultural resources, a cultural resources survey (36 CFR 800.4(b)(1); National Historic Preservation Act, as amended, Section 110(a)(2)(A) and Section 112; and 48 FR 44716), conducted by a professional archaeologist (36 CFR 800.2(a)(2), will be required before any ground disturbance occurs which is associated with development of this lease. In addition, a report, which meets professional and Mississippi State Historic Preservation Office standards for survey reports (36 CFR 61.1(c), will be submitted to and approved by the BLM and the Mississippi State Historic Preservation Officer before ground disturbance is approved and/or conducted (36 CFR 800.1(c)). In addition, consultation with the Mississippi State Historic Preservation Officer (36 CFR 800.16(v)) will occur, and if necessary, consultation the Advisory Council on Historic Preservation (36 CFR 800.16(g)) and appropriate tribe/group of federally recognized Native Americans (36 CFR 800.16(m)), if necessary, will also occur. If currently unknown burials are discovered during development activities associated with this lease, Mississippi state law on unknown burials will be followed and consultation with the appropriate federally recognized Native American tribes/groups will take place.

Modification: None

Waiver: None

Exemptions: None

3. The lease area does not now but hereafter could contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to the proposed lease tract to further its conservation and management objective. BLM will not approve any ground-disturbing activity in association with this proposed lease that may affect any such species or habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. ' 1531 et seq., including completion of any required procedure for conference or consultation.

Modification: None

Waiver: None

Exemptions: None

APPENDIX C

Correspondence

APPENDIX D

References

United States Department of Agriculture, Natural Resource Conservation Service.
<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

U.S. Fish and Wildlife Service (USFWS), Southeast Region.
<http://www.fws.gov/southeast/>

U.S. Fish and Wildlife Service (USFWS). 2002. Birds of Conservation Concern.

Hamel, P. 1992. The Land Manager's Guide to the Birds of the South.

Peterson, R. 1980. Birds of Eastern and Central North America.

Mississippi Department of Environmental Quality (MDEQ).
<http://www.deq.state.ms.us/>

Mississippi Department of Archives and History.
<http://mdah.state.ms.us/>

Tami St. Germain, 2012. Biological Assessment for Expression of Interest 1597. Contract biologist for Denbury Onshore, LLC.

Victor Galan, PhD, Deep East Texas Archaeological Consultants. 2012. Cultural Resources Impact Statement for Expression of Interest 1597. Contracted by Denbury Onshore, LLC.

FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD

FINDING OF NO SIGNIFICANT IMPACT

Based on the attached environmental assessment (EA) and lease conditions and stipulations, I have determined that the proposed action will not have any significant impacts and an environmental impact statement (EIS) is not required.

Bruce Dawson
Field Manager

Date

DECISION RECORD

It is my decision to authorize the offer to lease for Oil and Gas of the proposed tracts located in T7N, R2E, Sec's. 11, 12, 13, 14 and 23 described by metes and bounds, Madison County, Choctaw Meridian, Mississippi [EOI 1597]. The No Surface Occupancy (NSO) restriction identified for the proposed action has been formulated into a lease conditions and stipulations that are attached in the environmental assessment (EA) by reference.

RATIONALE FOR DECISION

The decision to allow the proposed action does not result in any undue or unnecessary environmental degradation and is consistent with the laws and regulations of the Federal, State, or local government. The proposed action was subject to a 30-day public review.

DSD, Natural Resources

Date