

BIOLOGICAL EVALUATION

Consent to Lease National Forest System Lands for Oil and Gas Exploration and Development

Project Description

The Forest Service received a lease package from the BLM. The package contained 63 tracts, which are scattered across the Wayne National Forest, within the boundaries of all three administrative units. The purpose of the project is to determine which Wayne National Forest lands, if any, are available for Federal oil and gas activities and under what conditions should these lands be offered for leasing.

This project is considered the second step in a 3-step oil and gas leasing process. This second step is a programmatic-level project whereby a decision is made as to what National Forest lands are suitable for oil and gas leasing and development, and under what conditions these lands would be leased. This project looks at three parameters: (1) it verifies compliance with the Forest Plan; (2) it develops a reasonable future development scenario that best describes the types of surface disturbing activities that are likely to occur if consent to lease is granted; and (3) it determines which on-the-ground factors limit or restrict access to and development of the mineral resources.

The third step of the Wayne National Forest's leasing process is a site-specific analysis of a proposed lease development plan. A lessee will provide an Application for Permit to Drill (APD). It is at that time that a site-specific Biological Evaluation would be conducted. Step 3 of the leasing process does not occur until after this programmatic step is completed.

Four alternatives are being considered in the project:

- A. Consent would be given to make all 63 tracts available for leasing using lease stipulations developed in Forest Plan Amendment 8.
- B. None of the 63 tracts would be made available for leasing (no action alternative).
- C. Consent would be given to make all 63 tracts available for leasing using lease stipulations developed in Forest Plan Amendment 8 and the 2001 EA. In addition, terms and conditions provided by the Biological Opinion (BO) would be applied.
- D. Consent would be given to make some of the 63 tracts available for leasing. Tracts not included in this alternative were considered to contain a certain number of tracts where impacts cannot be mitigated using lease stipulations or the terms and conditions in the BO.

Introduction

This biological evaluation (BE) reviews the effects of the proposed action and alternatives on Federally threatened and endangered animal species and Regional Forester sensitive animal species (TES).

The project area for this analysis is defined as the 63 tracts included in the lease package. This project involves an administrative decision to lease, or not lease, federal minerals. While this project is an administrative step in a 3-step leasing process, this biological evaluation will consider the effects of minerals development on species and their habitats in a programmatic fashion. No ground disturbing activities would occur until after a tract is leased, an operating plan is submitted, and a site-specific environmental analysis is completed.

The Bureau of Land Management (BLM) prepared an analysis of the future development from this lease package. It was estimated that 4 wells would be developed in the next five years. This equates to a potential disturbance of 8.6 acres, and includes the roads, well site, tank battery and associated facilities. This disturbance estimate will be used throughout this biological evaluation.

Federal Threatened and Endangered Species

Table 1 lists the five Federally-listed animal species that have been identified as being present on or near the Wayne National Forest (USFS 2001; USFWS 2001).

Table 1. Federally listed species addressed in this biological evaluation

Species	Species Status	Occupied Habitat in Project Area	Suitable Unoccupied Habitat in the Project Area	No Suitable Habitat in the Project Area
Indiana Bat <i>Myotis sodalis</i>	E	X		
Bald Eagle <i>Haliaeetus leucocephalus</i>	T		X	
Fanshell <i>Cyprogenia stegaria</i>	E			X
Pink Mucket Pearly Mussel <i>Lampsilis abrupta</i>	E			X
American Burying Beetle <i>Nicrophorus americanus</i>	E		X	

E = Endangered; T = Threatened

The Biological Assessment (BA) (USFS 2001) and Biological Opinion (BO) (USFWS 2001) contain detailed information about the life history, status, and range of the federally listed species. Therefore, the following discussion centers on the effects of the proposed action and alternatives on the federally listed species.

Indiana Bat

The Wayne National Forest is within the Indiana bat's range, so the species may be present on any part of the Forest during spring, summer or fall (USFWS 2002). For this reason it was listed as occupying habitat in the project area (Table 1). The Forest Service estimated that mineral development activities "may affect – likely to adversely affect" the Indiana bat and its habitat (USFS 2001). Mineral development in the Forest may inadvertently remove potential roost trees during construction of well pads, pipeline corridors, or access roads, which are not restricted from summer construction. Incidental take of one or more Indiana bats may result from the removal of a roost tree during the non-hibernating period of April 15 through September 15.

Oil and gas activities occurring in forested riparian areas may result in the loss of forest cover on a small scale. According to the Biological Opinion (USFWS 2001), these activities are not expected to affect the Indiana bat's usage of riparian foraging areas. The clearing of trees for these activities may open forest canopies to a level that is preferred by the Indiana bat.

Runoff from production wells could contaminate nearby ponds, waterholes or natural collections of water, such as in road ruts, which may be used by the bat for drinking sources. Established Forest Plan standards and guidelines require replacement of any waterholes that are destroyed during mineral development activities with equal or larger-sized waterholes. In addition, BLM and State of Ohio regulations dictate well pad and tank battery construction standards to avoid the potential for runoff.

All action alternatives address protection of drinking and aquatic invertebrate production areas through the use of stipulations for riparian area protection. Alternative A utilizes stipulation A2(g) as it was written in the original 2001 environmental assessment to protect riparian resources. This stipulation defines the riparian area as being 100 feet, 50 feet, and 25 feet along perennial, intermittent, and ephemeral streams, respectively. These widths do not always protect certain riparian and floodplain values such as recruitment of woody debris or flood storage. The Eastern Region of the Forest Service has provided new riparian delineation direction since that time (Regional Supplement FSM 2500). The new direction considers riparian as being the land-water interface, thereby increasing the size of riparian areas in Alternatives C and D.

Alternative A does not apply the terms and conditions found in the Wayne's Biological Opinion to any potential leases, and therefore this alternative is likely to adversely affect the species. The terms and conditions in the Biological Opinion are deemed nondiscretionary by the U.S. Fish and Wildlife Service, and are considered necessary to remain in compliance with section 7 (o)(2) of the Endangered Species Act. Failure to assume and implement the terms and conditions may result in the lapse of protective coverage of section 7(o)(2). Implementation of Alternative A would result in cumulative effects to the species and would require the need to initiate formal consultation on this project with the U. S. Fish and Wildlife Service.

No oil and gas activities would occur if Alternative B were implemented. Therefore there would be no direct, indirect, or cumulative effect to the Indiana bat or to suitable habitat.

Stipulation B5(h)(i) would be applied to all leases in Alternatives C and D as a way to address direct effects related to removal of roost trees during the nonhibernating season. This stipulation was applied as a means to incorporate the Biological Opinion's terms and conditions into the lease package. This stipulation will ensure that suitable Indiana bat roost trees are not removed during the nonhibernation season. Oil and gas production has occurred in parts of the Forest since the 1860's (USFS 2002), and it is expected to continue in the foreseeable future. Some wells have been plugged and the associated facilities removed and revegetated. There is a trend for newly developed well sites to go from an open state to a more closed (vegetated) state over time. From this personal experience, and the fact that only 8.6 acres are likely to be developed in the next five years, and that protective measures are incorporated into the lease package, minimal cumulative effects are expected to occur to this species as a result of implementing Alternatives C and D. These alternatives are not likely to adversely affect the species.

Bald Eagle

Historically, the bald eagle nested along the entire southern border of Lake Erie, but rarely and sporadically bred in other portions of Ohio (Perterjohn and Rice 1997). At the present time, there are no known nesting populations of bald eagles on Wayne National Forest lands, however bald eagles have been spotted near the National Forest during the summer months (USFS 2001). The U. S. Fish and Wildlife Service recognizes its current, recent, and possible distribution as occurring in the following counties within the project area: Hocking, Noble, and Washington (USFWS 2002). Nesting generally occurs within one-half mile of large bodies of water, although they will occasionally have nests in upland areas where there is good access to food (USFS 2001).

The Forest Service estimated that mineral development activities are likely to adversely affect the bald eagle and its habitat (USFS 2001). Oil and gas production would create noise and human disturbance that may disrupt eagle activities. Noise created from the construction of access roads and well pads as well as the operation of the well itself may cause eagles to relocate.

All action alternatives address riparian area protection. Alternative A utilizes stipulation A2(g) as it was written in the original 2001 environmental assessment to protect riparian resources. This stipulation defines the riparian area as being 100 feet, 50 feet, and 25 feet along perennial, intermittent, and ephemeral streams, respectively. These widths do not always protect certain riparian and floodplain values such as recruitment of woody debris or flood storage. The Eastern Region of the Forest Service has provided new riparian delineation direction since that time (Regional Supplement FSM 2500). The new direction considers riparian as being the land-water interface, thereby increasing the size of riparian areas in Alternatives C and D.

Alternative A does not apply the terms and conditions found in the Wayne's Biological Opinion to any potential leases, and therefore this alternative is likely to adversely affect the species. The terms and conditions in the Biological Opinion are deemed nondiscretionary by the U.S. Fish and Wildlife Service, and are considered necessary to remain in compliance with section 7 (o)(2) of the Endangered Species Act. Failure to assume and implement the terms and conditions may result in the lapse of protective coverage of section 7(o)(2). Implementation of Alternative A

would result in the need to initiate formal consultation on this project with the U. S. Fish and Wildlife Service.

No oil and gas activities would occur if Alternative B were implemented. Therefore there would be no effect to the bald eagle or to suitable habitat.

Stipulation Ch(iii) would be applied to leases in Alternatives C and D that have suitable habitat, as a way to address effects related to removal of potential eagle roost trees along the Ohio River. The tracts in question are located in the Marietta Unit. This stipulation was applied as a means to incorporate the Biological Opinion's terms and conditions into the lease package. Oil and gas wells are present along the Ohio River, and they will likely continue to be placed in certain areas along the river. Generally speaking, the Ohio River corridor (along the Marietta unit) has become more forested over the last few decades although it remains a heavily used area by humans (e.g., recreation, transportation). Several islands, adjacent to National Forest lands, have been incorporated into the Ohio River Islands Refuge System, thereby encouraging future use of the area by bald eagles. The combination of the low amount of disturbance expected from this project (8.6 acres), No Surface Occupancy stipulations in riparian areas, and the protection of supercanopy trees lead to my determination that no cumulative effects are expected to occur to this species if Alternatives C and D were implemented. These alternatives should not likely adversely affect to the species.

American Burying Beetle

The U. S. Fish and Wildlife Service recognizes the current, recent, and possible distribution of the American burying beetle as being in the following counties within the project area: Athens, Hocking and Vinton (USFWS 2002). The Forest Service estimated that mineral development activities are likely to adversely affect the beetle and its habitat (USFS 2001). Mineral development in areas where surface occupancy is not permitted would not be expected to adversely impact the beetle. However, in areas where surface occupancy is permitted, site preparation could disrupt or destroy the beetle.

In the Biological Opinion, the U. S. Fish and Wildlife Service determined that no incidental take of the beetle is anticipated and therefore implementation of the Forest Plan, which includes projects like this, is not likely to result in jeopardy to the species. Because the U. S. Fish and Wildlife Service does not believe that incidental take of the beetle will occur, no terms and conditions were prescribed.

Mitigation Measure -- The beetle was recently reintroduced to an area just outside the Forest boundary of the Athens Unit. It is possible for the beetle to expand onto the Forest in this area, and because of that the U. S. Fish and Wildlife Service has recommended implementation of conservation measures in an area of 10 air miles around locations of occupied habitat. None of the tracts in the lease package occur within 10 air miles of the reintroduction site, however it is recommended that Stipulation Ch(iv) be applied to all Athens Unit tracts (for Alternatives C and D) in the lease package because suitable habitat is present on all tracts. This stipulation requires new road construction, and maintenance, be planned so that the least amount of ground disturbance is involved (USFWS 2001).

Alternative B would not affect the species since it is the no action alternative. Minimal cumulative effects are expected to occur if Alternatives A, C, and D are implemented. These alternatives are not likely to adversely affect the beetle. The area where the beetle is most likely to expand has seen much disturbance in the past, primarily from past coal mining. Over the years, the Forest Service has reclaimed many of the abandoned surface mines, including old roads, and forest cover has increased. Oil and gas activities continue to occur in the Athens Unit area, and roads are constructed on private and public lands for oil and gas activities, and access to rural residences. A low amount of oil and gas activity may occur in the next five years as a result of implementing Alternatives A, C, or D. Of the 23, 998 acres of National Forest lands within 10 air miles of the reintroduction site, 1502 acres exhibit suitable habitat with qualities much like the reintroduction site (USFWS 2001). While none of the tracts are within this area, if they were, the 8.6 acres of estimated disturbance over the next five years would equate to less than 0.6% of that habitat. For Alternatives C and D, the stipulation that addresses road construction and maintenance is a conservation measure that would benefit the beetle.

Fanshell

The fanshell is found in the Ohio River and Muskingum River, but its populations are in restricted reaches of these two aquatic systems. The U. S. Fish and Wildlife Service recognizes the current, recent, and possible distribution of the fanshell as being in Washington County (Muskingum River) within the project area (USFWS 2002). It has been documented to occur in the Ohio River near the Greenup Dam (USFS 2001). The fanshell is a large river species requiring deep water. None of the tracts in the lease package occur in the Muskingum River watershed (Washington County). The tracts found in Lawrence County are located in the northern part of the county, far from the Ohio River. Suitable habitat is not present in the Wayne National Forest proclamation boundary. Because of this, the project would have no effect on the species.

Pink Mucket Pearly Mussel

The pink mucket pearly mussel found in the Ohio River and Muskingum River, but its populations are in restricted reaches of these two aquatic systems. The U. S. Fish and Wildlife Service recognizes the current, recent, and possible distribution of the pink mucket pearly mussel as being in Washington County (Muskingum River) and Lawrence and Gallia Counties (Ohio River) within the project area (USFWS 2002). The pink mucket is a large river species requiring deep water. None of the tracts in the lease package occur in the Muskingum River watershed (Washington County). The tracts found in Lawrence and Gallia Counties are located in the northern part of the counties, far from the Ohio River. Suitable habitat is not present in the Wayne National Forest proclamation boundary. Because of this, the project would have no effect on the species.

Regional Forester Sensitive Species

Table 2. Regional Forester Sensitive Species addressed in this biological evaluation

Species	Occupied Habitat in the Project Area	Suitable Unoccupied Habitat in the Project Area	No Suitable Habitat in the Project Area
Allegheny Woodrat <i>Neotoma magister</i>		X	
Black Bear <i>Ursus americanus</i>	X		
River Otter <i>Lutra canadensis</i>	X		
Bobcat <i>Lynx rufus</i>		X	
Evening Bat <i>Nycticeius humeralis</i>		X	
Rafinesque's Big-Eared Bat <i>Plecoyus rafinesquii</i>		X	
Cerulean Warbler <i>Dendroica cerulea</i>	X		
Henslow's Sparrow <i>Ammodramus henslowii</i>			X
Timber Rattlesnake <i>Crotalus horridus</i>	X		
Eastern Hellbender <i>Cryptobranchus alleganiensis</i>	X		
Green Salamander <i>Aneides aeneus</i>			X
Ohio Lamprey <i>Ichthyomyzon bdellium</i>	X		
Western Lake Chubsucker <i>Erimyzon sucetta</i>			X
Eastern Sand Darter <i>Ammocrypta pellucida</i>	X		
Salamander Mussel <i>Simpsonaias ambigua</i>	X		
Round Hickorynut <i>Obovaria subrotunda</i>		X	
Lilliput <i>Toxolasma parvus</i>		X	
Little Spectaclecase Mussel <i>Villosa lienosa</i>	X		
Wabash River Cruiser <i>Macromia wabashensis</i>		X	
Grizzled Skipper <i>Pyrgus wyandot</i>		X	
Olympia Marble <i>Euchloe olympia</i>	X		
Regal Fritillary <i>Speyeria idalia</i>		X	

Allegheny Woodrat

Formerly known as *Neotoma floridana magister*, recent research has determined that the state endangered Allegheny woodrat is a distinct species from the eastern woodrat (Castleberry 2000). Populations in Ohio are generally associated with caves, fissures, and rocky outcrops of southeastern Ohio. Woodrats build nests out of sticks, twigs, bark, and other fine material in and around rocky outcrops and clifflines. They eat a wide variety of fruits, nuts, berries, and green plant materials. Individuals have been collected from the Hocking Hills area of Hocking County, but are not presently known to occur on the Wayne National Forest. Rocky outcrops do occur in parts of the Wayne National Forest, but the outcrops do not tend to form large complexes or clifflines. Where rocky outcrop habitat is known to be present on a tracts, a stipulation was included to protect this habitat. No cumulative effects are expected to occur with implementation of any Alternative. Implementing Alternatives A, C, or D should have no impacts to the species.

Black Bear

Black bear were thought to be extirpated from Ohio by 1850. However, bear sightings have been steadily increasing since the mid-1980s, and evidence suggests Ohio may support a small breeding population (DOW 2002a). This species is listed as state endangered in Ohio (DOW 2002a). Black bear prefer heavily wooded areas with a dense understory, but they will also utilize forests with open areas, like meadows. This includes the hardwood forests of eastern North America. Black bear have been sporadically found on the WNF, and problem bears have been relocated onto national forest lands. A black bear's home range and foraging pattern require several smaller food source areas that are connected by travel corridors. Stream and creek banks are often used as travel lanes because of thick undergrowth and a barrier-free escape route. Although black bears prefer thick cover, they often consume berries, flowers, grasses and sedges, herbs, tubers and roots, and nuts of all kind, many of which are found growing in open meadow situations. Black bear also eat small mammals, insects, and honey.

From 1999 to 2001, there were three confirmed and three unconfirmed black bear sightings in Monroe County (Swanson 1999a, 2000a, 2001a). In neighboring Washington County, there were four confirmed and 10 unconfirmed sightings since 1999 (Swanson 1999a, 2000a, 2001a). Suitable habitat for black bear exists in the general vicinity of the proposed project.

The opening-up of the canopy that would be associated with Alternatives A, C, and D could increase the amount and density of undergrowth found at the well sites over time, which could positively impact black bear, both with regard to food and cover production. However, there is also an associated negative noise impact both during the drilling operation (short-term) and after, when the pump is in operation (long-term). Taking both the positive and negative effects into consideration, along with the small amount of acreage likely to be affected in the next five years, and the fact that the black bear population appears to be increasing in Ohio, implementing Alternatives A, B, C, or D would not impact this species. No cumulative effects are expected.

River Otter

River otters were extirpated from Ohio by the early 1900s, but a reintroduction program began in 1986 (DOW 2002b). This species is currently listed as state endangered in Ohio (DOW 2002b). River otters live in streams, rivers, ponds, marshes, and wetlands. They prefer long, slow-flowing, meandering waterways. They have a low tolerance for chemical pollutants and will not be found in areas of poor water quality (DOW 2002b). Good otter habitat contains year-round open water, densely wooded riparian cover along the banks, and abundant fish, their favorite prey. Other major prey items include aquatic insects, crayfish, snakes, and frogs. Fallen trees, log jams, and other stream structures are important as resting and feeding habitat. The presence of beaver may also benefit otters. Beaver dams slow down water currents and allow sediments to settle. This makes it easier for otters to find and catch their prey. Otters also sometimes use abandoned beaver lodges for their dens. Chris Dwyer, a furbearer biologist for the Ohio Division of Wildlife, stated that a healthy riparian corridor is probably one of the most important attributes for the continued existence of the river otter (2001, pers. comm. between Lynda Andrews (WNF) and Chris Dwyer).

Otters were reintroduced to the Little Muskingum River . River otters are now known to occur through out the Little Muskingum River watershed (USFS 2002). Family groups have been sighted in both Monroe and Washington counties (DOW 2002c). The Little Muskingum was one of only three rivers in Ohio identified as suitable areas, in which river otters could survive and reproduce. The other rivers were The Grand River and Killbuck Creek. Otter sightings have been recorded in the Symmes Creek and Scioto River watersheds (Brian James pers. comm.)

The creation of a new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect river otter. Increased sedimentation leads to elevated turbidity of the water, which impedes an otter's underwater vision, thus decreasing foraging success. An increased sediment load can also affect the survival and reproductive success of the aquatic prey species upon which otters depend for food (Henley et al. 2000). However, Alternatives A, C, and D have stipulations placed on all tracts that are designed to protect riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package, and because only a very small acreage would likely be affected, implementation of Alternatives A, C, or D, no impacts are expected to result to this species. Oil and gas operations have been in existence for many decades, and oil and gas activities will continue in the future. Even with these activities occurring, this species is reproducing where it has been reintroduced. No cumulative effects are expected to occur.

Bobcat

Bobcats were thought to have been extirpated from Ohio by 1850, but more recent observations from hunters, hikers, and trappers have indicated that they are moving back into the state, particularly the unglaciated portion which includes the WNF (Swanson 1999). This species is currently listed as state endangered in Ohio (Swanson 2000). The bobcat is found in a variety of habitats and cover types. In the east, these include swamps, forests, and brushy areas. Their diet consists mainly of hares, rabbits, birds, and small mammals, and they also scavenge on carrion.

From 1970 – 1998, there were two confirmed and one unconfirmed bobcat sightings in Monroe County. Most recently, there was a confirmed sighting in 2001 (Swanson 1998b, 1999b, 2000b, 2001b). Suitable habitat for bobcat exists on some tracts.

The installation of an oil/gas well along a currently undisturbed area can affect bobcat. They shy away from human contact and are found most often in areas not accessible by motorized vehicles (Svendsen 1979). Thus, they are impacted by any human encroachment on previously undisturbed habitat. Alternatives A, C, and D would have minimal cumulative effects on the species. Alternatives A, C, and D may impact individuals, but are not likely to cause a trend towards federal listing or a loss of population viability. Alternative B would have no impact to the species.

Evening Bat

Little is known about the evening bat in Ohio, but it is believed to be rare (Belwood 1998). Ohio is probably near the northern edge of this species' range. This bat forms maternity colonies in attics, tree cavities, and under loose bark on trees. They are thought to migrate to warmer climates in winter. Evening bats emerge early in the evening to feed on flying insects among trees. In Illinois and Indiana, they have been found foraging along the edges of mature woods and within clearings in those woods (Belwood 1998). One male evening bat was recorded on the Ironton unit during mist net surveys conducted from 1978 to 1981 (Bookhout and Lacki 1981). More recent bat surveys on the Athens and Ironton units of the WNF failed to document the presence of this bat species (Kiser and Bryan 1997, Kiser et al. 1998; 1999; 2000). Suitable habitat exists on some tracts in the lease package (based on a review of the Wayne's vegetation database (CDS)).

The effects to this species as a result of oil and gas production activities would be the same as those displayed for the Indiana bat. Suitable habitat (trees with loose bark or cavities) could be removed during the construction of well pads, tank batteries or access roads. On the other hand, the openings created by the access roads or tank batteries could offer improved foraging habitat for the species. Alternatives C and D incorporate a stipulation (B5(h)(i)) into the leases that limits some tree removal until the September 15 to April 15 time period. Although designed to protect Indiana bat habitat, this stipulation would provide protection of suitable evening bat habitat during the time of year when they would most likely be present.

Alternative A does not provide the protection during summer roosting periods that Alternatives C and D do, therefore direct effects are possible if summer roost trees were to be removed. Because of this, minimal cumulative effects would be expected. Alternative A may impact individuals, but is not likely to cause a trend to federal listing or loss of viability. Alternative B is the no action alternative and therefore would not impact the species. Because only 8.6 acres are likely to be developed in the next five years, because the small openings may improve foraging habitat, and because protective measures are incorporated into the lease package, no direct or cumulative effects are expected to occur to this species as a result of implementing Alternatives C and D. Alternatives C and D should have no impact on the species.

Rafinesque's Big-eared Bat

The Rafinesque's big-eared bat is restricted to heavily forested regions. Females form small nursery colonies in abandoned and collapsing buildings or, rarely, in caves. Males tend to be solitary and rest during the day in old buildings, hollow trees, or crevices under loose bark. Rafinesque's big-eared bats are thought to forage in forests and forest edge areas, preying mostly on moths (KY Bat Working Group web site). In the winter, this species hibernates in caves and mines. The Rafinesque's big-eared bat is very rare and may only occur accidentally in the Ohio (Belwood 1998). Gottschang (1981) did not consider it a regular member of the Ohio mammalian fauna and reported two occurrences in Adams County where limestone caves and extensive sandstone cliffs are present. No reproductive activity for this species has been reported in the state. Numerous nights of surveying effort in the Wayne National Forest have failed to document the species on the Forest (Bookout and Lacki 1981; Kiser and Bryan 1997; Kiser et al, 1998, 1999, 2000).

The effects to this species as a result of oil and gas production activities would be the same as those displayed for the Indiana bat. Suitable habitat (trees with crevices under loose bark or hollow trees) could be removed during the construction of well pads, tank batteries or access roads. On the other hand, the openings created by the access roads or tank batteries could offer improved foraging habitat for the species. Alternatives C and D incorporate a stipulation (B5(h)(i)) into the leases that limits some tree removal until the September 15 to April 15 time period. Although designed to protect Indiana bat habitat, this stipulation would provide protection of suitable habitat during the time of year when Rafinesque's big-eared bat would most likely be present.

Alternative A does not provide the protection during summer roosting periods that Alternatives C and D do, therefore direct effects are possible if summer roost trees were to be removed. Because of this, minimal cumulative effects would be expected. Alternative A may impact individuals, but is not likely to cause a trend to federal listing or loss of viability. Alternative B is the no action alternative and therefore would not impact the species. Because only 8.6 acres are likely to be developed in the next five years, because the small openings may improve foraging habitat, and because protective measures are incorporated into the lease package, no direct or cumulative effects are expected to occur to this species as a result of implementing Alternatives C and D. Alternatives C and D should have no impact on the species.

Cerulean Warbler

A federal and state species of concern/special interest, the Cerulean warbler is a neotropical migrant that occurs throughout the eastern United States in summer. Eastern Ohio is in the core area of the species' breeding range. The cerulean warbler prefers large tracts of mature deciduous woods. In southeast Ohio, it is found in mixed mesophytic upland and floodplain forests. Nests are located in the canopy of tall trees (Peterjohn and Rice 1991). They are known to occur throughout all units on the Wayne National Forest and are relatively common. Cerulean warblers have been confirmed on some tracts in the lease packages. Removal of trees during the nesting season could directly affect some individuals.

The BLM estimated that about 8.6 acres of ground would be disturbed in the next five years. Depending on the type of habitat that is developed for oil and gas activities, it is possible that as many as 8.6 acres of suitable Cerulean habitat would be lost if Alternatives A, C, or D were implemented. Alternatives A, C, and D have stipulations included in the lease package that

address concerns about tree removal during the breeding season. Because of the small amount of acreage expected to be disturbed during the next five years, and because stipulations are in place to protect the species during the breeding season, no impacts should occur to the cerulean warbler if Alternatives A, C, or D are implemented. Alternative B would have no effect on the species or habitat if implemented since it calls for no activities to occur.

Henslow's Sparrow

This species utilizes grassland habitat for breeding. It has been found on reclaimed stripmine areas in the Wayne National Forest, and the nearby Crown City Wildlife Area. These occupied sites are extensive grass areas that have not reverted to forest.

None of the tracts in the lease package have suitable habitat for this species. Alternatives A, B, C, and D should have no impact on the species.

Timber Rattlesnake

The timber rattlesnake is a federal species of concern and a state endangered species in Ohio. The species is currently found in widely scattered areas of southern unglaciated Ohio. Limited numbers occur in Adams, Athens, Hocking, Jackson, Pike, Ross, Scioto, and Vinton counties (Caldwell 2002). It has been confirmed in Lawrence County (Kathy Flegel, pers. comm.) Timber rattlesnakes prefer dry, wooded hill country. Summer habitat is described as “mixed deciduous or coniferous forests with nearly closed canopy, heavy leaf litter and little herbaceous cover, and a few rocks or fallen trees” (DOW 2002c). Den sites are usually found in rock outcroppings and on talus, south-facing slopes with relatively open canopy cover. It is thought that human persecution combined with habitat destruction and a low reproductive rate account for the declining population (Caldwell 2002).

Suitable habitat exists on some tracts in the lease package, including one near a potential den site. The Forest Plan Standards and Guidelines offer protection to rock outcrops (FP page 4-47); however individuals, if present, could be directly affected by increased use of a previously undisturbed area (getting run over by vehicle use of roads or getting killed or hurt by people who attempt to harass or kill snakes).

Alternative A has no further protection measures for rattlesnake habitat than the Forest Plan standard and guideline that protects rock outcrops. Therefore, Alternative A may impact individuals but they are not likely to cause a trend to federal listing or loss of viability. Alternative B is the no action alternative and therefore would have no impact to the species. Alternatives C and D include a stipulation on specific tracts that protects the rattlesnake habitat. One tract was removed from Alternative D because it was near a potential den site. Alternatives C and D should have no impact on the species.

Eastern Hellbender

Hellbenders are aquatic organisms throughout their life and remain active year-round. These salamanders generally spend the daylight hours in a natural or self-excavated den beneath large slabs of rock or other shelter-providing objects (logs and boards) on the bottom of streams or

rivers. Hellbenders become active after dark, leaving shelter to forage, feeding primarily on crayfish, fish, frogs and a variety of invertebrates. Courtship and breeding begin in late summer. Sexually mature salamanders migrate to and congregate within certain areas to breed. Hellbenders are more conspicuous at this time of the year and some diurnal activity may be observed on overcast days. Males excavate a large nest chamber beneath a rock in preparation for breeding. Gravid females are either attracted to or corralled into the nest sites by the males. Egg laying is initiated about the first week in September. Very little is known about larval habits and survivorship, as very few are encountered in the field. It is likely that they either suffer high mortality (falling prey to fish and other predators) during the first years of life, or that they are utilizing some part of the aquatic habitat that makes them difficult to locate and document. Within the Wayne National Forest, suitable habitat exists in the mainstem of the Little Muskingum River. A single individual was collected in 1988, however none were found during a survey in 1999 and 2000 (Pfungsten 2001). Pfungsten (2001) is convinced that the hellbender exists in the Little Muskingum, but surveys in their habitats are difficult.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Green Salamander

The edge of this species range includes the Ironton Ranger District. This salamander is generally found in sandstone ledge crevices, under rocks, rotting trees, and stumps. To date, the green salamander has been recorded from six townships in three counties of Ohio, all of which are within seven miles of the Ohio River (Pfungsten and Downs 1989).

No suitable habitat is available on the tracts in the lease package. Suitable habitat exists in the Lake Vesuvius area, however none of the tracts occur in this area. Alternatives A, B, C, and D should have no impact to this species.

Ohio Lamprey

The Ohio lamprey moves from the Ohio River into tributaries to spawn when water temperatures reach 50°F or more. The newly transformed sub-adults descend into the lower courses of the larger rivers or into the Ohio River, where there is a sufficient population of fishes upon which to prey (Trautman 1981). Within the Wayne National Forest, the Ohio lamprey is known only from the mainstem of the Little Muskingum River. Its spawning habitat consists of the large extensive

riffles common in the middle reaches of the system (Rice and Michael 2001). Suitable habitat does not exist in other streams in the Forest.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest Service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Western Lake Chubsucker

This species range includes from the pothole lakes and glaciated streams of Ohio, however Trautman (1981) reported their were questionable records of it along the Ohio River. It is now found in the upper Symmes Creek drainage within the Wayne National Forest (Holeski 1992; 1993). It is intolerant of turbidity and siltation, and usually occurs most often in areas with much submerged vegetation and where the bottoms are of sand or fine gravel.

Suitable habitat is present in the Blackfork wetlands area in the Symmes Creek drainage. No suitable habitat is present on any of the tracts in the lease package, and none of the tracts occur in this Blackfork area. Alternatives A, B, C, and D should have no impact on this species.

Eastern Sand Darter

The eastern sand darter inhabits sandy areas of streams of moderate- to larger-sized streams. The darter buries itself into the sand, with only its eyes exposed. It will wait for passing prey and will dash out to capture it, after which it reburies itself (Trautman 1981). Within the Wayne National Forest, two stream systems possess suitable habitat for the species: the mainstem of Symmes Creek and Little Muskingum River. Individuals have been captured from each of these systems.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect

all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), implementation of Alternatives A, B, C, or D should not impact this species.

Salamander Mussel

Suitable habitat for this species includes medium to large rivers on mud or gravel bars and under flat slabs or stones (Cummings and Mayer 1992). For the Wayne National Forest, suitable habitat exists in the mainstem of the Little Muskingum River. Although all watersheds with suitable habitat have been surveyed for the salamander mussel, the species has only been documented from the mainstem of the Little Muskingum River during a 1999-2000 survey (Hoggarth 2001).

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Round Hickorynut

Suitable habitat for this species includes medium-sized streams in sand and gravel in areas with moderate flow (Cummings and Mayer 1992). Surveys have documented this species in the lower reaches of Pine Creek, the middle reaches of Symmes Creek, and the lower half of the Little Muskingum River (Watters 1988; Hoggarth 2001). Suitable habitat exists adjacent to or immediately downstream of some tracts in the lease package.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and

guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Lilliput

Suitable habitat for this species includes ponds, lakes, and creeks to large rivers in mud, sand, or fine gravel (Cummings and Mayer 1992). Although all watersheds with suitable habitat have been surveyed for the lilliput, the species has only been collected in the Black Fork drainage in the Symmes Creek watershed (Watters 1988). No tracts are located in this drainage, however suitable habitat does exist in the project area.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Little Spectaclecase Mussel

This mussel is characteristically associated with the old Teays River drainage, and Ohio is considered the northern-most extent of its range (Watters 1988). It inhabits small to medium streams in sand or gravel (Cummings and Mayer 1992). Although all watersheds with suitable habitat have been surveyed for the little spectaclecase mussel, the species has been collected only in the Pine Creek and Symmes Creek drainages. Suitable habitat exists adjacent to or immediately downstream of some tracts in the lease package.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five

years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Wabash River Cruiser

The Wabash river cruiser, a federal species of concern, is a dragonfly that uses streams with patches of water willows (*Justicia americana*). The adults will also fly over streams or be on woodland trails or old logging roads. Currently, the only record of this species found near the WNF was on a dammed stream reservoir at Burr Oak State Park in Morgan County (near the Athens unit) in August 1982 (Heady 1994). Slow water is present adjacent to some tracts in the lease package, so suitable habitat does exist in the project area.

The creation of new well sites using large machinery in close proximity to streams could impact stream quality by way of increased sedimentation entering the waterway, which could indirectly affect this species. An increased sediment load can affect the survival and reproductive success of eggs and larvae. Accidental leaks of oil products or brine from well sites or transmission lines could affect organisms. Chemicals associated with the oil products and brine affect the physiological processes of fish and invertebrates. Protection measures are incorporated into all leases, including State of Ohio regulations, BLM regulations, and stipulations the Forest service places on tracts. Stipulations have been placed on all tracts with riparian areas in order to protect all riparian values, one of which is sediment trapping and filtering. Because water quality and riparian protection is inherent in the lease package (i.e., regulations, Forest Plan standards and guidelines), and because only a very small acreage would likely be affected over the next five years (8.6 acres), no cumulative effects are expected and implementation of Alternatives A, B, C, or D should not impact this species.

Southern Grizzled Skipper

The southern grizzled skipper, a federal and state species of concern/special interest, is a butterfly associated with disturbed openings in mature oak forests, which includes open hillsides, disturbed ridgetops, power line cuts and roadsides (Iftner et al. 1992). The host plants for this butterfly (dwarf cinquefoil, *Potentilla canadensis*; coltsfoot, *Tussilago farfara*; wood vetch, *Vicia caroliniana*; and spring beauty, *Claytonia virginica*) all require open canopy and full sunlight (Gleason and Cronquist 1991). The suppression of fire in our forests has led to the invasion of woody growth in the openings that renders the habitat unsuitable. One small population of the grizzled skipper is known to occur on a maintained pipeline corridor in Hocking County on the Athens unit. Suitable habitat, in the form of host plants, may exist on some tracts. Oil and gas activities may open the canopy within oak forests, thereby providing habitat for host plants. According to the Wayne National Forest's botanist, these host plants are widely distributed and are disturbance-loving plants. Alternatives A, B, C, or D would have no impacts to this species.

Olympia Marble

The Olympia marble is a butterfly species about which little is known. It is thought to occur on dry ridgetops in and adjacent to open oak forests. Rockcresses (*Arabis* spp.) are believed to be the primary food plant. It has been found at Lake Vesuvius and Phillips Knob on the Ironton Ranger District (Kathy Flegel, pers. comm.). Suitable habitat exists on some of the tracts.

Alternative A provides no protection to host plants, if present on certain tracts. Therefore, it is possible some host plants could be affected. Alternative A would likely have minimal cumulative effects to the species. This could affect some *Olympia marbles*, but it is not likely to cause a trend towards federal listing or a loss of population viability. Alternative B would have no impacts to the species. To provide protection to host plants, Stipulation Ch(i) was incorporated into leases in Alternatives C and D. Because this protective measure is included on tracts with suitable habitat, Alternatives C and D should have no impact to the species.

Regal Fritillary

The regal fritillary is a butterfly listed as a federal species of concern and endangered in Ohio. Populations of this butterfly are extremely localized, and it is thought to be extirpated from the state (David Parshall, Ohio Lepidopterists, 1995, pers. comm. with Lynda Andrews). In southeastern Ohio, the regal fritillary occurred in wet fields, pastures, and along roadsides, but usually near a woodland border (Iftner et al. 1992). Violets are believed to be an important host plant, particularly the birdsfoot violet, *Viola pedata*. The birdsfoot violet grows in dry fields and open woods (Gleason and Cronquist 1991). Suitable habitat, in the way of host plants, for the regal fritillary may exist on some of the tracts. Oil and gas activities may open the canopy within oak forests, thereby providing habitat for host plants. According to the Wayne National Forest's botanist, these host plants are disturbance-loving plants. Alternatives A, B, C, or D would have no impacts to this species.

Mitigation Measures for TES

District wildlife biologists should be involved in site-specific analysis of any developments planned for these tracts.

Encourage oil and gas developers to utilize existing roads and disturbed areas to the extent possible when planning site-specific project plans.

Summary

The following two tables provide a summary of my findings for the four alternatives.

Determination for Federally listed species for each Alternative

Species	Alternative A	Alternative B	Alternative C	Alternative D
Indiana Bat	Likely to adversely affect	No Effect	Not likely to adversely affect	Not likely to adversely affect
Bald Eagle	Likely to adversely affect	No Effect	Not likely to adversely affect	Not likely to adversely affect
Fanshell	No Effect	No Effect	No Effect	No Effect
Pink Mucket Pearly Mussel	No Effect	No Effect	No Effect	No Effect
American Burying Beetle	Not likely to adversely affect	No Effect	Not likely to adversely affect	Not likely to adversely affect

Determination for Regional Forester Sensitive Species for each Alternative

Species	Alternative A	Alternative B	Alternative C	Alternative D
Allegheny Woodrat	No Impact	No Impact	No Impact	No Impact
Black Bear	No Impact	No Impact	No Impact	No Impact
River Otter	No Impact	No Impact	No Impact	No Impact
Bobcat	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability	No Impact	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability
Evening Bat	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability	No Impact	No Impact	No Impact
Rafinesque's Big-Eared Bat	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability	No Impact	No Impact	No Impact
Cerulean Warbler	No Impact	No Impact	No Impact	No Impact
Henslow's Sparrow	No Impact	No Impact	No Impact	No Impact
Timber Rattlesnake	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability	No Impact	No Impact	No Impact
Eastern Hellbender	No Impact	No Impact	No Impact	No Impact
Green Salamander	No Impact	No Impact	No Impact	No Impact
Ohio Lamprey	No Impact	No Impact	No Impact	No Impact
Western Lake Chubsucker	No Impact	No Impact	No Impact	No Impact
Eastern Sand Darter	No Impact	No Impact	No Impact	No Impact
Salamander Mussel	No Impact	No Impact	No Impact	No Impact
Round Hickorynut	No Impact	No Impact	No Impact	No Impact
Lilliput	No Impact	No Impact	No Impact	No Impact
Little Spectaclecase Mussel	No Impact	No Impact	No Impact	No Impact
Wabash River Cruiser	No Impact	No Impact	No Impact	No Impact
Grizzled Skipper	No Impact	No Impact	No Impact	No Impact
Olympia Marble	May impact individuals but it is not likely to cause a trend to federal listing or loss of viability	No Impact	No Impact	No Impact
Regal Fritillary	No Impact	No Impact	No Impact	No Impact

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/s/Rebecca R. Ewing

July 12, 2002

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Date