



# United States Department of the Interior



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IN REPLY REFER  
TO:

FWS/RIFO

November 1, 2007

Mr. Kenneth A. Barr  
U.S. Army Corps of Engineers,  
Rock Island District  
Clock Tower Building, P.O. Box 2004  
Rock Island, Illinois 61204-2004

Dear Mr. Barr:

This letter accompanies the U.S. Fish and Wildlife Service's (Service) Biological Opinion (BO) in response to your August 23, 2007, letter and Biological Assessment (BA) requesting initiation of formal consultation under Section 7 of the Endangered Species Act. The consultation concerns the possible effects of actions proposed by the Des Moines County Conservation Board as part of the Big Hollow Creek Recreation Area lake project, Des Moines County, Iowa on federally listed endangered or threatened species. The BA addresses the effects of the project on the bald eagle (*Haliaeetus leucocephalus*), Indiana bat (*Myotis sodalis*), prairie bush clover (*Lespedeza leptostachya*), western prairie fringed orchid (*Platanthera praeclara*), Higgins eye pearlymussel (*Lampsilis higginsii*), sheepnose mussel (*Plethobasus cyphus*), and spectacle case mussel (*Cumberlandia monodonta*). All information required of you to initiate consultation was either included with your letter or is otherwise accessible for our consideration and reference. As stated in the BA, the proposed project will have no effect on the bald eagle, prairie bush clover, western prairie fringed orchid, or the 3 freshwater mussel species. While the bald eagle is no longer listed under the Endangered Species Act, it remains protected by the Bald and Golden Eagle Protection Act, 16 U.S.C. 668. Therefore, this consultation only addresses the effects of the project as described in Public Notice No. CEMVR- OD-P-2006-182 and attendant documents on the Indiana bat.

Section 7 allows the Service up to 90 calendar days to conclude formal consultation with your agency and an additional 45 calendar days to prepare our BO unless our agencies mutually agree to an extension. Cooperation and close coordination between the permit applicant, the Corps, and our staff allowed us to prepare this document in a shortened timeframe.

Mr. Kenneth A. Barr

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Questions regarding this biological opinion may be directed to Robert Clevestine of this office at (309) 757-5800, extension 205.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard Nelson", written in a cursive style.

Richard C. Nelson  
Field Supervisor

cc: FWS R3 (Szymanski)  
IaDNR (Howell, Schwake)  
COE OD-P (Johnson)  
COE PM-A (Johnson)  
French-Reneker-Associates (Rice)

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BIOLOGICAL OPINION  
FOR  
PUBLIC NOTICE No. CEMVR-OD-P-2006-182  
Des Moines County Conservation Board

SUMMARY OF FINDINGS

In this Biological Opinion, the U.S. Fish and Wildlife Service (Service) has determined that authorization of the activities described in the subject Public Notice and associated documents will not jeopardize the continued existence of the Indiana bat (*Myotis sodalis*), but will result in incidental take of this species.

By letter dated September 5, 2007, the Service acknowledged the Biological Assessment findings that the project will have no effect on the prairie bush clover (*Lespedeza leptostachya*), western prairie fringed orchid (*Platanthera praeclara*), Higgins eye pearly mussel (*Lampsilis higginsii*), and the Federal candidates sheepsnose mussel (*Plethobasus cyphus*) and spectaclecase mussel (*Cumberlandia monodonta*). As the bald eagle (*Haliaeetus leucocephalus*) is no longer listed under the Endangered Species Act, consultation for this species is no longer necessary.

The subject Public Notice states that the project will involve the construction of a new recreational lake with the overall purpose to provide expanded recreational facilities. The actions associated with the project involve maternity habitat modification in the summer range of the Indiana bat.

## **BACKGROUND**

This consultation considers the impacts of tree removal in forested habitat utilized by one or more Indiana bat maternity colonies, and the permanent conversion of 10,500 linear feet of riparian stream channel to a lake system following authorization of the project under Section 404 of the Clean Water Act.

The Biological Assessment (BA) (USACE 2007) and Biological Opinion (BO) evaluate the effects to listed species and are intended to clarify any effects that may be insignificant individually, but in totality may be substantial, rise to the level of incidental take, or result in jeopardy or adverse modification of Critical Habitat. Specifically, the consultation evaluates how authorization of the project will alter current environmental conditions during and following completion of the project, and how these anticipated changes in environmental conditions will affect threatened and endangered species occurring within the action area.

This consultation was conducted by an interagency consultation team composed of representatives from the Corps of Engineers, Rock Island District (Corps) headquartered in Rock Island, Illinois, and the U.S. Fish and Wildlife Service's (Service), Rock Island Ecological Services Field Office in Moline, Illinois. Team members cooperated with each other in exchanging information preparing and reviewing the BA and this BO. Ultimate responsibility for the content of the BA rests with the Corps, and the ultimate responsibility for the content of this BO rests with the Service.

Oversight of the consultation process was provided by the Service's Field Office Supervisor and the Corps District Office staff.

### Species Covered in this Consultation

This consultation covers the Indiana bat (*Myotis sodalis*). During informal consultation, the Corps determined the prairie bush clover (*Lespedeza leptostachya*), western prairie fringed orchid (*Platanthera praeclara*), Higgins eye pearl mussel (*Lampsilis higginsii*), and the Federal candidates sheepsnose mussel (*Plethobasus cyphus*) and spectaclecase mussel (*Cumberlandia monodonta*) would not be affected by the proposed project and need not be addressed further. By letter dated September 5, 2007, the Service concurred with the Corps' findings in its Biological Assessment that the project may adversely affect the Indiana bat and would have no effect on the above species.

## **CONSULTATION HISTORY**

February 20, 2002 – Des Moines County Conservation Board applies for 404 permit from Corps.

February 22, 2006 – Public Notice CEMVR-OD-P-2006-182 is released from the Corps. The Public Notice is open from February 22, 2006 to March 23, 2006. The preliminary determination in the public notice states the project will have no effect on listed species.

March 23, 2006 – The Service submits comments on the Public Notice to the Corps. The Service requests a detailed account of the timber proposed to be removed as part of the project which may fit the description of Indiana bat or bald eagle habitat.

April 20, 2006 – The Corps requests a detailed response from the Applicant as to the presence or absence of the species listed in the Service letter of March 23, 2006. The Corps also requests a mist netting survey of the Indiana bat and a detailed account of the forested areas that will be impacted by the project.

May 10, 2006 – The Corps receives breeding bird and floristic surveys of the Big Hollow Creek Recreation Area from the Applicant.

May 12, 2006 – The Service receives breeding bird and floristic surveys of the Big Hollow Creek Recreation Area from the Corps.

May 16, 2006 – The Service e-mails the Service mist netting guidelines to the Applicant.

June 5, 2006 – The Corps submits a letter to Kent Rice of French-Reneker Associates on behalf of the Applicant that because information requested by the Corps had not been received, the permit application was considered withdrawn.

September 8, 2006 – The Service receives a copy of the mist netting survey for Big Hollow Creek Recreation Lake. The survey was conducted July 1-4, 2006.

September 27, 2006 – The Service submits comments on the Public Notice to the Corps. The Service requests that a Biological Assessment (BA) be performed for the action.

October 19, 2006 – The Corps requests that the Applicant prepare a BA in response to the Service's comments of September 27, 2006.

January 30, 2007 – The Service responds to a request by the Applicant for more information on writing BA's. The Service response includes a list of all species which could be found within the action area and a link to the Service's webpage "Guidance for preparing a biological assessment."

February 20, 2007 – The Service receives draft BA from the Applicant.

February 27, 2007 – The Service provides comments to the Applicant through a phone call on the draft BA.

March 14, 2007 – The Corps receives draft BA from the Applicant.

June 8, 2007 – The updated Public Notice CEMVR-OD-P-2006-182 is released from the Corps. The Public Notice is open from June 8, 2007 to July 7, 2007.

June 18, 2007 – The Corps submits updated draft BA from the Applicant to the Service and requests review.

June 22, 2007 – Telephone call between Corps and Service discusses project plans and contents of BA.

July 12, 2007 – Meeting between Corps and Service to discuss draft BA at the Rock Island Ecological Services Field Office.

August 21, 2007 – Corps submits updated draft BA to Service via e-mail.

August 22, 2007 – Service provides comments to the Corps on updated BA.

August 23, 2007 – Corps initiates formal consultation, submitting final BA.

September 5, 2007 – Service acknowledges receipt of BA and initiation of formal consultation.

October 4, 2007 – Service submits draft consultation history to Corps for review.

October 15, 2007 – Service submits draft BO to Corps for review.

October 31, 2007 – Service submits final BO to Corps.

January 30, 2008 – Service submits amendment to BO changing Closing paragraph.

## **BIOLOGICAL OPINION**

### **1. Description of the Proposed Action**

The U.S. Army Corps of Engineers (USACE) proposes to permit in-stream and wetland work under Section 404 of the Clean Water Act on Big Hollow Creek in Des Moines County, Iowa. This action is described in Public Notice No. CEMVR-OD-P-2006-182, dated June 8, 2007. The Applicant for this permit is Des Moines County Conservation Board. The Applicant requires authorization by both USACE and the Iowa Department of Natural Resources (Iowa DNR) to construct a dam for the purpose of constructing a recreational lake. As described in the Public Notice, the lake will inundate approximately 10,500 linear feet of stream channel to create an impoundment of 178 acres.

For the purpose of this consultation, the Service considers that the action area includes the entire 800-acre county park described in the BA (USACE 2007).

This consultation focuses on the actions resulting from authorizing dam construction, work in wetlands, inundation of the stream, and subsequent conversion of portions of upland woodland habitat to a swimming beach, boat ramp, and campgrounds.

#### 1.1 Conservation Measures

Conservation measures to minimize harm to listed species which are proposed by the action agency are considered part of the proposed action and their implementation is required under the terms of the consultation. The Corps outlined the following conservation measures in its August 23, 2007 letter in reference to the 2007 Biological Assessment:

As Conservation Measures, the Applicant proposes to:

1. Add an action plan for bat management, including Indiana bats in particular, to the conservation plan(s) for all properties managed by the Applicant, including the action area. This could include various actions such as education efforts, forest management, and tree planting in landscape plans. As a member of Bat Conservation International, this would continue the Applicant's landowner and community education efforts that highlight the importance of landscape scale management to promote native vegetation diversity, the protection of water resources, and retention of potential roost tree snags among other positive bat conservation and management efforts.
2. Remove trees only between September 16 and April 14.
3. Minimize tree clearing in non-lake areas.

4. Plant walnut and shagbark hickory and similar species in landscaped areas.
5. Retain and create more snags for bat roosting areas.
6. Erect bat boxes around the perimeter of the action area.

In a personal communication October 5, 2007, Kent Rice of French-Reneker-Associates, Inc. included the following conservation measure.

7. Mist netting surveys will be performed in years 3 and 6 after construction in order to evaluate the Indiana bat population within the action area. Telemetry studies may be done in coordination with the Service's Rock Island Field Office in order to identify specific maternity trees.

## **2. Status of the Species**

This section presents the biological or ecological information relevant to formulating the biological opinion. Appropriate information on the species' life history, its habitat and distribution, and other data on factors necessary to its survival are included to provide background for analysis in later sections. This analysis documents the effects of past human and natural activities or events that have led to the current range-wide status of the species. Portions of this information are also presented in listing documents, the recovery plan (USFWS 1983) and the draft revised recovery plan (USFWS 1999), and are referenced accordingly.

### 2.1 Species/Critical Habitat Description

The Indiana bat (*Myotis sodalis*) was listed as an endangered species on March 11, 1967 (Federal Register 32[48]:4001) under the Endangered Species Preservation Act of October 15, 1966 (80 Stat. 926; 16 U. S. C. 668aa[c]). Eleven caves and two mines in six states were listed as Critical Habitat on September 24, 1976 (41 FR 41914). These sites along with other known hibernacula were classified in the Indiana Bat Recovery Plan as Priority One, containing at least 30,000 bats; Priority Two, containing 1000 to fewer than 30,000; and Priority Three, with less than 1,000 bats (USFWS 1983). In the 1999 draft revised Recovery Plan, the Priority Two lower limit was reduced to 500 bats. In summary, the objectives of the Recovery Plan are to: (1) protect hibernacula; (2) maintain, protect, and restore summer maternity habitat; and (3) monitor population trends through winter censuses.

### 2.2 Life History

The Indiana bat is a medium-sized bat with a head and body length that ranges from 41 to 49 mm. The fur is described as dull pinkish-brown on the back, and somewhat lighter on the chest and belly. The ears and wing membranes do not contrast with the fur (Barbour and Davis 1969). There are no recognized subspecies. Generally, Indiana bats hibernate from October through April (Hall 1962, LaVal and LaVal 1980), depending upon local weather conditions. Figure 1 provides a depiction of the annual cycle. They hibernate in large, dense clusters,



ranging from 300 bats per square foot to 484 bats per square foot (Clawson et al. 1980, Clawson, pers. observ. October 1996 in USFWS 2000). Upon arrival at hibernating caves in August-September, Indiana bats "swarm", a behavior in which large numbers of bats fly in and out of cave entrances from dusk to dawn, with relatively few roosting in the caves during the day (Cope and Humphrey 1977). Swarming continues for several weeks and mating occurs during the latter part of the period. Fat supplies are replenished as the bats forage prior to hibernation.

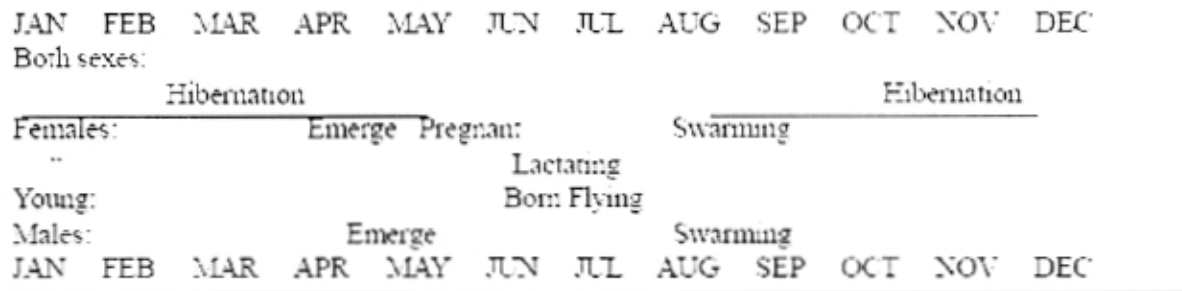


Figure 1. Indiana Bat Annual Chronology

Indiana bats tend to hibernate in the same cave at which they swarm (LaVal et al. 1976), although swarming has occurred at caves other than those in which the bats hibernated (Cope and Humphrey 1977). During swarming, males remain active over a longer period of time at cave entrances than do females (LaVal and LaVal 1980); probably to mate with the females as they arrive. After mating, females enter directly into hibernation. A majority of bats of both sexes hibernate by the end of November, by mid-October in northern areas (Kurta, pers. observ. June 1997), but hibernacula populations may increase throughout the fall and even into early January (Clawson et al. 1980).

Adult females store sperm through the winter and become pregnant via delayed fertilization soon after emergence from hibernation. Young female bats can mate in their first autumn and have offspring the following year, whereas males may not mature until the second year. Limited mating activity occurs throughout the winter and in late April as the bats leave hibernation (Hall 1962).

Females emerge from hibernation ahead of males; most winter populations leave by early May. Some males spend the summer near hibernacula in Missouri (LaVal and LaVal 1980) and West Virginia (Stihler, pers. observ. October 1996, in USFWS 2000). In spring when fat reserves and food supplies are low, migration is probably hazardous (Tuttle and Stevenson 1977). Consequently, mortality may be higher in the early spring, immediately following emergence.

Females may arrive in their summer habitats as early as April 15 in Illinois (Gardner et al. 1991a, Brack 1979). During this early spring period, a number of roosts (e.g., small cavities) may be used temporarily, until a roost with larger numbers of bats is established. Humphrey et al. (1977) reported that Indiana bats first arrived at their maternity roost in early May in Indiana, with substantial numbers arriving in mid-May. Parturition occurs in late June and

early July (Easterla and Watkins 1969, Humphrey et al. 1977) and the young are able to fly

between mid-July and early August (Mumford and Cope 1958, Cope et al. 1974, Humphrey et al. 1977, Clark et al. 1987, Gardner et al. 1991a, Kurta et al. 1996).

Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas: That is, they return to the same summer range annually to bear their young. Females typically utilize larger foraging ranges than males (Garner and Gardner 1992). Prior to the survey conducted for this project, maternal activity had been recorded at 26 locations in Iowa and approximately 246 locations range-wide (Andrew King, USFWS, pers. com. 2007), based on the capture of reproductive females (pregnant or lactating). Currently, the top five States by total records are Indiana (83), New York (32), Kentucky (32), Illinois (28), and Iowa (26).

Trees in excess of 16 inch dbh with exfoliating bark are considered optimal for maternity colony roost sites, but trees in excess of 9 inch dbh appear to provide suitable maternity roosting habitat (Romme et al. 1995). Cavities and crevices in trees may also be used for roosting. In Illinois, Gardner et al. (1991) found that forested stream corridors and impounded bodies of water were preferred foraging habitats for pregnant and lactating Indiana bats.

After the summer maternity period, Indiana bats migrate back to traditional winter hibernacula. Some male bats may begin to arrive at hibernacula as early as July. Females typically arrive later and by September the number of males and females are almost equal. Swarming behavior, described previously, occurs during this period. By late September many females have entered hibernation, but males may continue swarming well into October in what is believed to be an attempt to breed with late arriving females.

Male Indiana bats may be found throughout the entire range of the species. Males appear to roost singly or in small groups, except during brief summer visits to hibernacula. Males have been observed roosting in trees as small as 3 inch diameter at breast height (dbh).

### 2.3 Diet and Foraging

Indiana bats forage over a variety of habitat types but prefer to forage in and around the tree canopy of both upland and bottomland forest or along the corridors of small streams. Bats forage at a height of approximately 2-30 meters under riparian and floodplain trees (Humphrey et al. 1977). They forage between dusk and dawn and feed exclusively on flying insects, primarily moths, beetles, and aquatic insects. Females in Illinois were found to forage most frequently in areas with canopy cover of greater than 80% (Garner and Gardner 1992). The species feeds on flying insects, both aquatic and terrestrial. Diet appears to vary across the range, as well as seasonally and with age, sex, and reproductive status (Murray and Kurta 2002, Lee 1993, Belwood 1979). Murray and Kurta (2002) found that diet is somewhat flexible across the range and that prey consumed is potentially affected by regional and local differences in bat assemblages and/or availability of foraging habitats and prey. For example, Lee (1993) and Murray and Kurta (2002) found that adult aquatic insects (Trichoptera and Diptera) made up 25-81% of Indiana bat diets in northern Indiana and Michigan. However, in

the southern part of the species range terrestrial insects (Lepidoptera) were the most abundant prey items (as high as 85%) (Lee 1993, Brack and LeVal 1985, LaVal and Laval 1980, Belwood 1979). Kiser and Elliot (1996) found that Lepidopterans (moths), Coleopterans (beetles), Dipterans (true flies) and Homopterans (leafhoppers) accounted for the majority of prey items (87.9% and 93.5% combined for 1994 and 1995, respectively) consumed by male Indiana bats in their study in Kentucky. Diptera, Trichoptera, Lepidoptera, and Coleopterans also comprised the main prey of Indiana bats in Michigan (Murray and Kurta 2002); however, Hymenopterans (alate ants) were also taken when abundant.

Reproductively active females and juveniles exhibit greater dietary diversity than males and non-reproductively active adult females. Lee (1993) found that reproductively active females eat more aquatic insects than adult males or juveniles in Indiana. These differences in dietary demands between age groups, sex, and reproductive stage is perhaps due to higher energy demands of reproductive females and juveniles. Male Indiana bats summering in or near hibernation caves feed preferentially on moths and beetles.

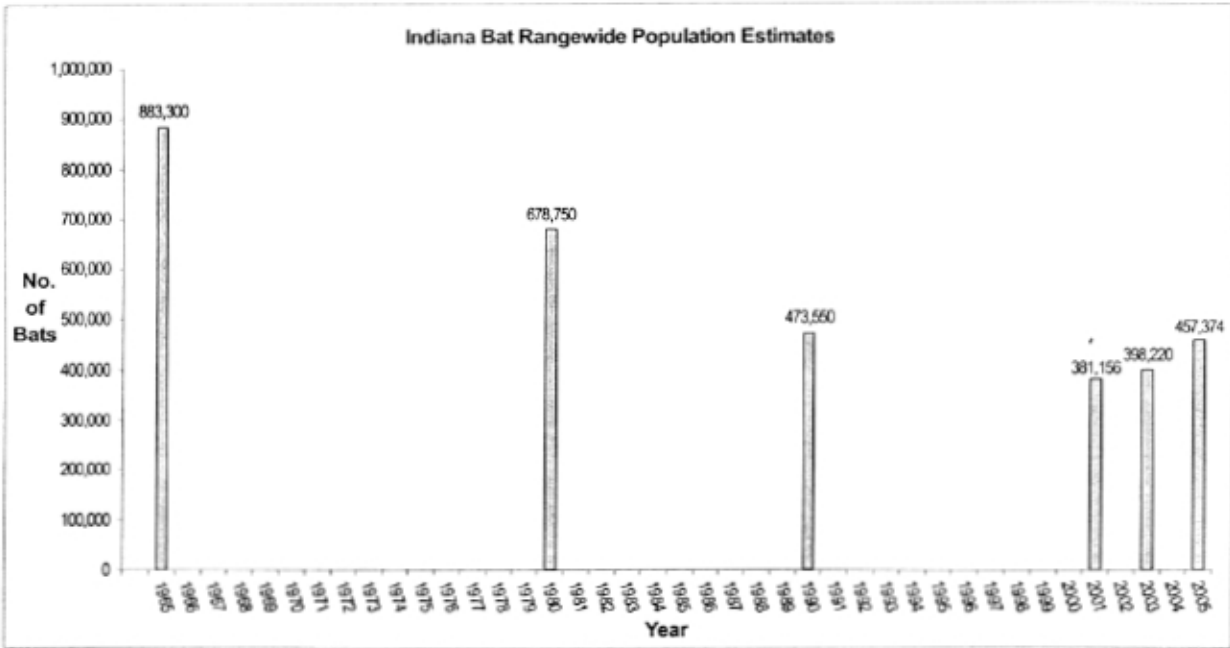
#### 2.4 Range

The species range includes much of the eastern half of the United States, from Oklahoma, Iowa, and Wisconsin east to Vermont, and south to northwestern Florida. The Indiana bat is migratory and the above described range includes both winter and summer habitat. The winter range is associated with regions of well-developed limestone caverns. Major populations of this species hibernate in Indiana, Kentucky, and Missouri. Smaller winter populations have been reported from Alabama, Arkansas, Georgia, Illinois, Maryland, Mississippi, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, and West Virginia. More than 85% of the entire known population of Indiana bats hibernates in only nine caves.

#### 2.5 Population Dynamics

Based on censuses taken at all hibernacula, the total known Indiana bat population is estimated to number about 457,000 bats (Table 1). This represents an increase over the 2003 rangewide estimate of 398,000, but regional trend disparities noted by Clawson (2002) still exist between northern and southern populations. The most severe declines in wintering populations have occurred in two states: Kentucky, where 200,200 bats were lost between 1960 and 2001, and Missouri, where 326,000 Indiana bats were estimated to be lost in the same period. In Indiana, populations dropped by 50,000 between the earliest censuses and 1980, but have returned to former levels in recent years. Currently, almost half of all the hibernating Indiana bats in existence (approximately 173,100) winter in Indiana.

Table 1. Indiana bat rangewide population estimates (Data sources: 1965-1990, Clawson 2002; 2001-2005, USFWS, unpublished data, 2006). Rangewide estimates calculated from all known hibernacula were not attempted or data was not available for most years prior to 2001.



Indiana bat populations were first surveyed in the late 1950s (Hall 1962). In the decades since then, the total rangewide population of Indiana bats declined 57% (Clawson 2002). Regional trends contrast sharply, with the southern states losing approximately 80% over the survey period and the northern states gaining 30% (Clawson 2002).

## 2.6 Status and Distribution

The current status and distribution of the species is described above. The reasons for listing the species were summarized in the original Recovery Plan as: (1) Hibernating populations in Missouri have shown a decline over the last seven years despite an intensive cave management program; (2) The largest known hibernating population at Pilot Knob Mine, Missouri, continues to be threatened by subsidence (mine collapse); (3) Kentucky hibernating populations are not protected adequately and continue to be depressed (USFWS 1983). Clawson (2002) provided that the hibernating populations in Missouri have continued to decline. Pilot Knob Mine has undergone continued subsidence to the point at which it is unsafe to enter for survey and Kentucky hibernating populations have also continued to decline. The species' range-wide trend is described in Section 2.5 Population Dynamics.

## 2.7 Reasons for Decline

Not all of the causes of Indiana bat population declines have been determined. Although several known human-related factors have caused declines in the past, they may not solely be responsible for recent declines.

Documented causes of Indiana bat population decline include:

*Disturbance and vandalism.* A serious cause of Indiana bat decline has been human disturbance of hibernating bats during the decades of the 1960s through the 1980s. Bats enter hibernation with only enough fat reserves to last until spring. When a bat is aroused, as much as 68 days of fat supply is used in a single disturbance (Thomas et al. 1990). Human use (e.g., including recreational cavers and researchers) near hibernating Indiana bats can cause arousal (Humphrey 1978, Thomas 1995, Johnson et al. 1998). If this happens too often, the bats' fat reserves may be exhausted before the species is able to forage in the spring.

Active programs by State and Federal agencies have led to the acquisition and protection of a number of Indiana bat hibernacula. Of 127 caves/mines with populations > 100 bats, 54 (43%) are in public ownership or control, and most of the 46 (36%) that are gated or fenced are on public land. Although such conservation efforts have been successful in protecting Indiana bats from human disturbance, they have not been sufficient to reverse the downward trend in many populations.

*Improper cave gates and structures.* Some hibernacula have been rendered unavailable to Indiana bats by the erection of solid gates in the entrances (Humphrey 1978). Since the 1950's, the exclusion of Indiana bats from caves and changes in air flow are the major cause of loss in Kentucky (an estimated 200,000 bats at three caves) (USFWS 1999). Other cave gates have so modified the climate of hibernacula that Indiana bats were unable to survive the winter because changes in air flow elevated temperatures which caused an increase in metabolic rate and a premature exhaustion of fat reserves (Richter et al. 1993).

*Natural hazards.* Indiana bats are subject to a number of natural hazards. River flooding in Bat Cave, Mammoth Cave National Park, drowned large numbers of Indiana bats (Hall 1962). Other cases of hibernacula being flooded have been recorded by Hall (1962), DeBlase et al. (1965), and USFWS (1999). A case of internal cave flooding occurred when tree slash and debris (produced by forest clearing to convert the land to pasture) were bulldozed into a sinkhole, blocking the cave's rain water outlet and drowning an estimated 150 Indiana bats (USFWS 1999).

Another hazard exists because Indiana bats hibernate in cool portions of caves that tend to be near entrances, or where cold air is trapped. Some bats may freeze to death during severe winters (Humphrey 1978, Richter et al. 1993). Indiana bats are vulnerable to the effects of severe weather when roosting under exfoliating bark during summer. For example, a maternity colony was displaced when strong winds and hail produced by a thunderstorm stripped the bark from their cottonwood roost and the bats were forced to move to another roost (USFWS 1999).

Suspected causes of Indiana bat decline include:

*Microclimate effects.* Changes in the microclimates of caves and mines may have contributed more to the decline in population levels of the Indiana bat than previously estimated (Tuttle, in

lit. August 4, 1998). Entrances and internal passages essential to air flow may become larger, smaller, or close altogether, with concomitant increases or decreases in air flow. Blockage of entry points, even those too small to be recognized, can be extremely important in hibernacula that require chimney-effect air flow to function. As suggested by Richter et al. (1993) and Tuttle (in lit. August 4, 1998), changes in air flow can elevate temperatures which can cause an increase in metabolic rate and a premature exhaustion of fat reserves.

Hibernacula in the southern portions of the Indiana bat's range may be either near the warm edge of the bat's hibernating tolerance or have relatively less stable temperatures. Hibernacula in the North may have passages that become too cold. In the former case, bats may be forced to roost near entrances or floors to find low enough temperatures, thus increasing their vulnerability to freezing or predation. In the North, bats must be able to escape particularly cold temperatures. In both cases, modifications that obstruct air flow or bat movement could adversely impact the species (USFWS 1999).

*Land use practices.* The Indiana bats' maternity range has changed dramatically since pre-settlement times (Schroeder 1991; Giessman et al. 1986; MacCleery 1992; Nigh et al. 1992). Most of the forest in the upper Midwest has been fragmented, fire has been suppressed, and native prairies have been converted to agricultural crops or to pasture and hay meadows for livestock. Native plant species have been replaced with exotics in large portions of the maternity range, and plant communities have become less diverse than occurred prior to settlement. Additionally, numerous chemicals are applied to these intensely cropped areas. The changes in the landscape and the use of chemicals (McFarland 1998) may have reduced the availability and abundance of the bats' insect forage base.

In the eastern U.S., the area of land covered by forest has been increasing in recent years (MacCleery 1992; Iverson 1994; Crocker et al. 2006). Whether or not this is beneficial to the Indiana bat is unknown. The age, composition, and size class distribution of the woodlands will have a bearing on their suitability as roosting and foraging habitat for the species outside the winter hibernation season.

*Chemical contamination.* Pesticides have been implicated in the declines of a number of insectivorous bats in North America (Mohr 1972, Reidinger 1972, Reidinger 1976, Clark and Prouty 1976, Clark et al. 1978, Geluso et al. 1976, Clark 1981). The effects of pesticides on Indiana bats have yet to be studied. McFarland (1998) studied two sympatric species, the little brown bat (*Myotis lucifugus*) and the northern long-eared bat (*M. septentrionalis keenii*), as surrogates in northern Missouri and documented depressed levels of acetylcholinesterase, suggesting that bats there may be exposed to sublethal levels of organophosphate and/or carbamate insecticides applied to agricultural crops. McFarland (1998) also demonstrated that bats in northern Missouri are exposed to significant amounts of agricultural chemicals, especially those applied to corn. BHE Environmental, Inc. (1999) collected tissue and guano samples from five species of bats at Fort Leonard Wood, Missouri and documented the exposure of bats to p,p'-DDE, heptachlor epoxide, and dieldrin.



### 3. Environmental Baseline

The purpose of the environmental baseline is to describe the current status of the species within the action area and those factors that have contributed to this state. Range-wide factors affecting the species include those listed previously under Reasons for Decline. Other factors with the potential to adversely affect roosting habitat include forest clearing by private industry within the summer range in Iowa, woodlot management and wetland drainage by landowners, and land management activities by the State of Iowa.

Much of the remaining forested land cover classes in the predominately agricultural areas of southeastern Iowa represent potential summer habitat for the Indiana bat. Due to their migratory behavior, Indiana bats likely follow watershed drainage corridors en route to their summer habitats and in returning to their hibernacula. In doing so, they may stop and roost temporarily in suitable floodplain trees, manmade structures such as barns or bridges, or may select an area to spend the summer in a maternity colony. Little definitive information exists regarding the species' maternity habitat selection versus habitat availability.

#### 3.1 Status of the Indiana Bat within the Action Area

The action area includes the entire 800-acre Big Hollow Creek Recreation Area. As described in the BA (USACE 2007), the action area includes 583 acres of wooded area that have been classified by Cady and McCormick (2003) as upland woodlands, open woods, shrub zones, alluvial woodlands, and riparian.

Most of the bottomland area around Big Hollow Creek has been farmed and has returned to trees and shrubs through succession. The bottomland area consists of the alluvial woodlands, open alluvium, shrub zones, and riparian area. The alluvial woodlands are described as shifting between areas of shrub, to reasonably stable woodland, to areas of reed canary grass, and other nondescript plant communities. Tree species include black walnut (*Juglans nigra*), box elder (*Acer negundo*), honey locust (*Gleditsia triacanthos*), pin oak (*Quercus palustris*), and shingle oak (*Quercus imbricaria*). Shrub zones are located throughout the action area but are well represented in the bottomlands. Shrub zones are described as mildly shrub occupied to extremely dense thickets of red cedar (*Juniperus virginiana*) and impenetrable hedges of multiflora rose (*Rosa multiflora*). The open alluvium areas are meadow-like areas on the stream terrace dissected to varying degrees by bands of shrubs and small trees and dominated by goldenrod (*Solidago spp.*), sedges (*Carex spp.*), and red top (*Agrostis gigantea*). Woody species in the riparian area include box elder, black walnut, and silver maple (*Acer saccharinum*).

The uplands surrounding the Big Hollow Creek drainage consist of upland woods, open woods, savanna, and open uplands. The upland woods are described as reasonably undisturbed woodlands dominated by oak but being encroached by some sugar maples. Vegetation on the bluffs and some hillsides is categorized as open woods containing open canopy oaks and an understory of native vegetation. The savanna area borders the upland woods and contains many prairie species not found in other areas. The open upland is

associated with the open alluvial areas of the bottomland and are interspersed with shrub zones. Like the alluvial areas, the open upland is dominated by goldenrod but do support a few remnant prairie species.

A mist netting survey conducted July 1-4, 2006 by Bat Conservation and Management, Inc. resulted in the capture of 54 bats representing five species, including 5 lactating female Indiana bats (Chenger 2006). Bat Conservation and Management staff chose three mist net sites based on the linear length of Big Hollow Creek, proposed to be flooded for the lake. Each of the three mist net sites were sampled on two nights, with three mist net locations at each site. Net locations were chosen to block the majority of the travel-way in the sample areas and were placed over roads, streams, and in other forest openings. These travel-ways along and close to the stream corridor are most likely being used for foraging (see section 2.3 Diet and Foraging). Therefore, survey results indicate that the project action area provides foraging habitat for the Indiana bats. In addition, because lactating females were captured in the action area, it is probable that at least one active maternity colony occurs in the area.

The wintering location of bats using the action area is not known. The action area is over 100 miles away from the closest hibernacula.

### 3.2 Factors Affecting the Indiana Bat Environment within the Action Area

The only resource management practices currently being used within the action area are forestry management (USACE 2007). In 1983, the Conservation Board carried out a timber sale around the proposed dam site removing 113 trees and 28 culls. Tree species included white oak (*Quercus alba*), red oak (*Quercus rubra*), black oak (*Quercus velutina*), hickory (*Carya species*), and basswood (*Tilia americana*) with a diameter at 4.5 feet ranging from 16 to 24 inches. In 2005, a timber sale was carried out below the proposed water line of the lake removing 467 trees, of which 20 were culls. Species included black walnut (*Juglans nigra*), white oak (*Q. alba*), red oak (*Q. rubra*), cottonwood (*Populus deltoids*), hickory (*Carya species*), basswood (*Tilia americana*), black oak (*Q. velutina*), hard maple (*Acer saccharum*), shingle oak (*Q. imbricaria*), honey locust (*Gleditsia triacanthos*), hackberry (*Celtis occidentalis*), white elm (*Ulmus americana*), red elm (*Ulmus rubra*), black cherry (*Prunus serotina*), and ash (*Fraxinus species*). From this description, it appears that some Indiana bat habitat may have been removed from below the proposed water line of the project site before current 404 permit was applied for. Currently, trees and brush are being removed from the backs of all the water control structures in the Big Hollow Recreation Area. Eleven of the 19 dams have been cleared or are clear of woody brush and are now grassland areas.

It is unknown if maternity roost trees have been among those removed from the site as part of the above clearing. Removal of these trees may have altered habitat characteristics that supported at least one Indiana bat maternity colony. The effects of this action on the colony may have been the potential reduction in habitat features contributing to reproductive success and recruitment.



Because maternal Indiana bats and bats representing 4 other species were captured in 2006, we can assume the areas along Big Hollow Creek are still being used as foraging areas and primary and secondary maternity roost trees may still exist.

#### **4. Effects of the Action**

This section includes an analysis of the direct and indirect effects of the proposed action on the species and/or its Critical Habitat and its interrelated and interdependent activities. .

##### 4.1 Dam Construction and Lake Impoundment

The Applicant proposes to clear 172 acres of forested habitat in proximity to the capture locations of lactating female Indiana bats. The currently forested bottomland area will be inundated to create a normal pool of 178 acres up to a maximum capacity of 258 surface acres of open water. During the first year of construction, five areas totaling 72 acres are proposed to be cleared of all vegetation below the waterline. The lower half of the dam is proposed to be built during the first year of construction and allowed to settle. The proposed dam would extend 750 feet long and will require 200,000 cubic yards of earth fill for construction. The borrow area for the dam, as proposed, would be in the north abutment of the spillway within the proposed lake area. During the second year of construction, the upper part of the dam is proposed to be constructed and seeded to prevent erosion. In later years the swimming beach, campgrounds, and boat ramp will be built. The total impacted area will be approximately 300 acres with the permanent removal of 172-acres of timber (approximately 30% of the timber in the action area) (USACE 2007).

As is stated in the conservation measures, all tree removal will be during the non-maternity period from September 16- April 14 so that there will be no expected direct take of individuals. The removal and inundation of primary and secondary maternity roost trees may adversely affect pregnant females. Long distance migration and pregnancy following a 6 to 7 month hibernation period likely exacts an energetic toll. Therefore, any additional energy demands from searching for new roost trees could potentially result in slower prenatal development or abortion, delayed parturition, slower postnatal development, delayed weaning and volancy, and increased juvenile predation risk. For both females and males, the effects from removal of roost trees and inundation of the bottomland may include increased energetic demands, exposure to inter and intra-specific competition, and exposure to predation while searching for new roosting and foraging areas. Destruction of multiple roost trees in a small area can greatly increase the thermoregulatory costs for individuals returning to familiar sites and could potentially disrupt the social bonds of a colony (Kurta and Murray 2002).

The likely behavioral response of bats returning after the roost trees are removed or inundated will be to disperse to adjacent upland suitable habitat. Because five other species of bats were captured in the action area, the potential for increased interspecific competition following inundation of 178 out of 800 acres of terrestrial habitat exists. Resource partitioning among foraging bats, including *Myotis sodalis* suggests such competition (LaVal et al. 1977; Lee1993;

Butchkoski and Turner 2005).

Approximately 441 acres of woodland will remain after the construction of the lake and all other park features. The bottomland forest that will be most affected by the project has been described by the Applicant and in the floristic survey as being brushy and less mature than the surrounding upland habitat (USACE 2007). The Applicant has estimated that for every one potential roost tree located in the bottomland area, the more mature uplands offers several dozen to a hundred potential roost trees (USACE 2007). Based on the description of the habitat that will be inundated as part of the project and that which will be remaining, we do not believe the loss of 30% of the forest cover in the action area will result in the site becoming unsuitable for Indiana bats. While the loss of familiar roost trees may cause short term physiological responses, they would not be expected to have long term consequences for the colony. If primary roost trees are removed, there may be delays in parturition as females are forced to regain colony cohesion but these effects are hard to predict.

Because this is a long-lived and highly philopatric species, individuals would be expected to attempt to maintain colony cohesion as close to familiar maternal habitat as possible. Therefore, protection and enhancement of remaining habitat would be expected to contribute to colony cohesion and successful recruitment for the species. Implementation of the proposed Bat Management Plan within the action area and implementation of other conservation measures may help stabilize remaining Indiana bat habitat and help stabilize the colony in the future.

In the Bat management Plan, the Applicant has offered several conservation measures which may be employed to help minimize the impacts to Indiana bat summer habitat (USACE 2007). Efforts will be made to deliberately increase natural or man-made roosts for Indiana bats with critical solar exposure, and having appropriate crevice characteristics, height, and size. The Applicant has stated an action plan for Indiana bats will be added to the conservation plan(s) for this project. Such a plan would include landscape planning, education of youth, adults and property owners, and forest and woodland management conducive to bat roosting foraging and maternal colonies. The plan would prescribe criteria for cutting trees or harvesting timber and efforts for planting tree species suitable for bat roosting. As suggested by the conservation measures and planned management of the action area, forested habitat within is expected to become more stable and potential Indiana bat habitat is expected to improve. Conservation measures to minimize harm to listed species which are proposed by the action agency are also considered part of the proposed project and their implementation is required under the terms of the consultation.

#### 4.2 Interrelated and Interdependent Actions

Effects of the action are analyzed together with the effects of other activities that are interrelated to, or interdependent with, that action. An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under construction.

The action under consultation is the construction of a dam and inundation of the Big Hollow Creek for the purpose of constructing a recreational lake. The subsequent conversion of portions of upland woodland habitat to a swimming beach, boat ramp, and campgrounds are considered interrelated and interdependent parts of the action. Construction of the swimming beach and boat ramp would affect 3.5 acres upland woodland habitat. The proposed campground loops would require the clearing of 7 acres. The Applicant has described these areas as consisting of poor quality brush consisting of thorny locust, shingle oak, multi-flora rose, and honeysuckle with few trees larger than 9 dbh (Kent Rice, French-Reneker-Associates, Inc., pers. com. 2007). The remaining areas surrounding the lake will remain in wooded habitat.

Minimal effects may be realized as energetic stress from searching for new suitable roost areas, although from the habitat description given by the Applicant, it does not appear that there will be many, if any, roost trees removed in the clearing of these areas. As stated above, loss of familiar roost trees in the uplands, while adverse in the short term, would not be expected to have long term consequences for the colony as approximately 441 acres of woodland will remain after the construction of the lake and all other park features. Clearing of the beach and recreational camping area, and removal of underbrush from the primitive campground may create additional foraging bat habitat.

Because the area is being constructed as a recreational lake, including many features designed for public use, removal of trees for human safety may be necessary during the summer maternity period. While it is possible to avoid most direct impacts to potential roost trees, roosting areas, and maternal colonies by scheduling construction/clearing during the non-hibernation season, it is likely that some impacts will occur over the life of the project.

#### 4.3 Indirect Effects

Indirect effects may include other Federal activities that have not undergone Section 7 consultation and non-Federal actions that might reasonably be expected to occur in the future as a result of the subject action.

As stated in the BA, the habitat surrounding the action area is primarily agricultural. Most potential Indiana bat habitat is located within the action area, owned by Des Moines County, and will not be available to secondary and commercial development. Therefore, indirect effects are considered to be negligible.

### **5. Summary**

As described in the BA (USACE 2007), the 800-acre action area includes 583 acres of wooded habitat. Tree harvests in 1983 and 2005 may have removed potential Indiana bat habitat from the bottomland surrounding Big Hollow Creek before this project was initiated. Lactating female Indiana bats were found in the bottomlands of the action area during a 2006 mist netting survey indicating the action area most likely provides foraging and roosting habitat for at least

one maternity colony.

The proposed project would require the clearing of 172 acres of forested habitat and the inundation of the bottomland to create a normal pool of 178 acres up to a maximum capacity of 258 surface acres of open water. Approximately 10.5 acres of marginal woodland habitat will be removed from the surrounding upland to create additional park features. Tree clearing will be during the non-maternity period between September 16 and April 14 to avoid direct take of individual bats. Potential impacts of project authorization on Indiana bats involve the effects resulting from displacement from any summer roost trees remaining below the proposed water line, in the dam area, and in the proposed upland park development areas.

These effects could include harm and harassment to adult male and female bats from increased energy demands from searching for and establishing new territories, increased inter- and intra-specific competition, and increased exposure to predation.

Approximately 441 acres of woodland will remain after the construction of the lake and all other park features. Based on the description of the habitat that will be inundated as part of the project and that which will be remaining, we do not believe the loss of 30% of the forest cover in the action area will result in the site becoming unsuitable for Indiana bats. While the loss of familiar roost trees may cause short term physiological responses, they would not be expected to have long term consequences for the colony.

Implementation of the proposed conservation measures may help stabilize remaining Indiana bat habitat.

No direct effects on hibernacula or designated Critical Habitat are foreseen from implementation of the recommended plan.

## **6. Cumulative Effects**

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act.

The Service is unaware of any other non-Federal actions that are reasonably certain to occur which may affect the Indiana bat in the action area. However, similar actions to those described will require authorization under Section 404 of the Clean Water Act. Given appropriate environmental coordination in the Section 404 review process, impacts to the Indiana bat can be avoided. Therefore, any cumulative effects due to non-Federal actions are considered to be negligible.

## **7. Conclusion**

After reviewing the current status of the Indiana bat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's opinion

that the proposed action is not likely to jeopardize the continued existence of the Indiana bat, and is not likely to destroy or adversely modify designated Critical Habitat.

The proposed project is not expected to affect hibernating activities or habitat. Authorization of the proposed project, however, presents the potential to affect summer habitat for both female and male Indiana bats, both adult and juvenile. Although infrequent and likely to be minimized by the conservation measures proposed, it is likely that adverse impacts to the individuals of the species cannot be avoided entirely, and take will occur. Potential impacts to Indiana bat habitat include removal of primary and secondary roost trees and loss of foraging habitat. Based on the preceding analysis of the quality and percentage of total forested habitat affected, conservation measures proposed by the action agency, and the timeline of the proposed action, it is expected that adverse impacts to Indiana bats will be minimized but not avoided entirely, due to the unknown distribution of roosting bats on the action area. Though impacts to individuals will occur, we do not anticipate colony-level consequences. Therefore, we do not anticipate any appreciable reduction in reproduction, numbers, or distribution of Indiana bats within the action area or rangewide. The action area is geographically distant from designated Critical Habitat, thus authorization of the proposed project does not affect Critical Habitat and no destruction or adverse modification of that Critical Habitat is expected.

## **8. Incidental Take Statement**

Section 9 of the Endangered Species Act (ESA) and Federal regulations pursuant to section 4(d) of the ESA, prohibits the take of endangered and threatened species without special exemption. Take is defined as, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the Applicant, Des Moines County Conservation Board, for the exemption of Section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Corps: (1) fails to assume and implement the terms and conditions; or (2) fails to require the Applicant to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit, the protective coverage of Section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of

the action and its impact on the species to the Service as specified in the Incidental Take Statement, pursuant to 50 CFR § 402.14(i)(3).

### 8.1 Extent of Take Anticipated

Incidental take of Indiana bats is expected to be in the form of harm and harassment. Based on the conservation measure of removal of trees outside the maternity colony dates of April 15 – September 15, we do not anticipate any direct take of Indiana bats to occur and that incidental take relative to maternal bats will occur in the form of harm and harassment from habitat loss as the proposed action will alter roosting and foraging habitat characteristics within suitable maternity habitat.

This incidental take statement is based on a maximum of 258 acres of habitat foregone in the impoundment and several single event clearings not to exceed an aggregate 172 acres for dam construction and clearing below the water line, and 10.5 acres in upland recreations areas. We anticipate that incidental take of Indiana bats will be difficult to detect within the project because: (1) dead or injured bats are rarely discovered due to the bat's small body size; and (2) the number of bats occupying a particular area at a particular time is highly variable and difficult to determine. Since the level of incidental take of Indiana bats resulting from non-lethal harm and harassment cannot be adequately quantified, incidental take will be estimated by the loss of roost trees potentially occupied by Indiana bats that are contained within the forested habitat estimated to be affected. These estimates of habitat alterations are described in the Direct Effects Summary preceding.

In order to monitor the level of take, we suggest monitoring bat use in the action area. Such monitoring, described at the end of this section, will determine the efficacy of the Conservation Measures described previously. If the conservation measures perform as expected, we do not believe incidental take will rise to the level of affecting the long term reproductive success or viability of the colony using the action area.

While the proposed conservation measures proposed by the Applicant will ensure that effort will be taken to maintain remaining habitat suitability, actual habitat utilization of these areas remain to be determined until implementation of the reasonable and prudent measures that follow.

Management activities on the action area that prevent enactment of the conservation measures and/or would significantly increase the number of trees removed during the non-hibernation season would be considered to affect this determination and would require reinitiation of consultation. Such activities, should they occur, will be documented in monitoring reports described subsequently.

### 8.2 Effect of the Take

As indicated within this BO, the Service determines that the level of expected take is not likely



to result in jeopardy to the species or destruction or adverse modification of Critical Habitat.  
8.3 Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of the Indiana bat:

Where evidence of possible maternal colonies (lactating females or juveniles prior to August 15) is discovered, in addition to preserving the character of the colony site, the Service and Iowa DNR will be notified to determine the adequacy of conservation measures and, determine if project modifications are warranted. Recommendations for further site monitoring will be developed collaboratively between the Corps, Service, State, and Applicant.

## **9. Terms and Conditions**

In order to be exempt from the prohibitions of Section 9 of the Act, the COE must comply with the following terms and conditions. These terms and conditions are non-discretionary.

1. Monitor clearing and construction of the project including review of clearing dates and acreages to ensure that they are outside of the Indiana bat maternity period (April 15 – September 15) and they are consistent with the acreages in the BO.
2. Monitor Indiana bat use of the action area every third year for 2 intervals (6 years) beginning no later than 3 years following completion of the construction and impoundment of the lake. Prior to each monitoring event, field work will be coordinated with the U.S. Fish and Wildlife Service Rock Island Field Office and Iowa DNR.
3. If site investigations or monitoring activities indicate that a maternity colony persists within the action area, roost areas used by the maternity colony(ies) will be identified and protected by establishing a buffer zone centered on the maternity roosting area. The actual area will be determined by a combination of topography, known roost tree locations, proximity of permanent water, and a site-specific evaluation of the habitat characteristics associated with the colony. Protective measures shall be established by developing a management strategy in cooperation with the Service, Iowa DNR, and the Applicant. Strategies may include such things as survey/monitoring plans, site enhancement plans, or alternative site development plans.

### 9.1 Requirements for Monitoring and Reporting of Incidental Take of Indiana Bats

Federal agencies have a continuing duty to monitor the impacts of incidental take resulting from their activities (50 CFR 402.14(i)(3)). In doing so, the Federal agency must report the progress of the action and its impact on the species to the Service as follows.

Supply the Service with a report, due by December 31 of the 3<sup>rd</sup> and 6<sup>th</sup> year following project completion and impoundment, that specifies progress and results of any terms and conditions that were required, identified by site-specific project, including the

number of live or dead Indiana bats encountered, and age, sex, and reproductive status of live bats handled.

Care must be taken in handling dead bat specimens that are found on project lands to preserve biological material in the best possible condition.

Any dead specimens found should be placed in plastic bags and refrigerated as soon as possible following discovery. The finding of any dead specimen should be reported immediately to the Service's Rock Island Field Office.

## **CLOSING**

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the monitoring period, the level of incidental take described above is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures. For the purpose of this biological opinion the incidental take would be exceeded when the impacts to forest resources exceeds the aggregate 172 acres for dam construction and clearing below the water line, and 10.5 acres in upland recreations areas; and/or the actions described in Conservation Measures preceding are not carried out as described.

## **REINITIATION NOTICE**

This concludes formal consultation on the actions outlined in the recommended plan provided in Public Notice CEMVR-OD-P-2006-182 and attendant documents for the Big Hollow Creek Recreation Area lake project in Des Moines County, Iowa. The subject Public Notice was dated March 19 2007, and the Biological Assessment dated July 24, was received July 27, 2007. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or Critical Habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to listed species or Critical Habitat not considered in this opinion; or (4) a new species is listed or Critical Habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.



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#### **Personal Communication**

Rice, Kent. October 5, 2007. Electronic Mail outlining additional information requested for the BO by the Service.



# United States Department of the Interior



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Moline, Illinois 61265  
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IN REPLY REFER  
TO:

FWS/RIFO

January 30, 2008

Mr. Kenneth A. Barr  
U.S. Army Corps of Engineers,  
Rock Island District  
Clock Tower Building, P.O. Box 2004  
Rock Island, Illinois 61204-2004

Dear Mr. Barr:

This letter accompanies the U.S. Fish and Wildlife Service's (Service) amended Biological Opinion (BO) first sent to you on November 1, 2007. The BO concerns the possible effects of actions proposed by the Des Moines County Conservation Board as part of the Big Hollow Creek Recreation Area lake project (Public Notice No. CEMVR- OD-P-2006-182), Des Moines County, Iowa on federally listed endangered or threatened species.

The original BO contained inaccurate information in the Closing paragraph (Section 9.1, p 21). The impacts to forest resources of 4.4 acres do not reflect the incidental take statement for this BO. Attached is an amended BO with the following Closing paragraph reflecting the corrected incidental take statement.

## **CLOSING**

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the monitoring period, the level of incidental take described above is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures. For the purpose of this biological opinion, the incidental take would be exceeded when the impacts to forest resources exceeds the aggregate 172 acres for dam construction and clearing below the

Mr. Kenneth A. Barr

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water line, and 10.5 acres in upland recreations areas; and/or the actions described in Conservation Measures preceding are not carried out as described.

Questions regarding this amendment may be directed to Kristen Lundh of this office at (309) 757-5800, extension 215.

Sincerely,



Richard C. Nelson  
Field Supervisor

cc: FWS R3 (Szymanski)  
IaDNR (Howell, Schwake)  
COE OD-P (Johnson)  
COE PM-A (Johnson)  
French-Reneker-Associates (Rice)  
Des Moines County Conservation Board (Bergman)