Emergency Biological Opinion
Mt. Erie, IL Marathon Pipe Line Spill Emergency Response
April 30, 2010

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion based on the review of spill response actions taken for the pipeline spill located in Wayne County, Illinois ("Spill Site") and the emergency consultation of the effects of the spill response actions on the federally listed endangered Indiana bat (*Myotis sodalis*) in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.).

Summary of Findings

The Service has determined that the emergency spill response actions conducted at the Spill Site did not jeopardize the continued existence of federally listed species. The action area is within the summer range for the federally listed endangered Indiana bat. There may have been incidental take in the form of harassment or harm of Indiana bats during the spill response actions.

Consultation History

There was coordination between the Service, U.S. Environmental Protection Agency (USEPA), State agencies, and Marathon Pipe Line LLC ("Marathon") during the emergency response at the Spill Site. The Service subsequently initiated consultation on this matter with the USEPA and U.S. Army Corps of Engineers according to the Spills Memorandum of Agreement (USCG *et al.* 2001), Wetlands Memorandum of Agreement (USACOE and USFWS 1992), and the endangered species consultation regulations (50 CFR §402).

The Service received a Biological Assessment from Arcadis (a consulting firm supporting Marathon) in a report dated December 22, 2009. A complete administrative record for this consultation is on file in the Service's Rock Island, Illinois Ecological Services Field Office.

Biological Opinion

1. Description of the Action

On August 10, 2008, an underground pipeline (20 inches in diameter) ruptured and about 5,000 barrels (42 gallons per barrel) of crude oil discharged into the environment. The crude oil flowed down slope and into a bottomland wetland complex in the floodplain of Elm Creek, rural Wayne County, Illinois. Marathon detected the loss of oil pressure in the pipeline and responded the same day to the incident. Marathon established an Incident Command and coordinated its emergency response with USEPA, State agencies, and the Service.

The emergency response actions included boom deployment to contain the floating crude oil in the sloughs and other wetlands, construction of siphon dams and berms to block down gradient flow of crude oil, and the construction of roads for heavy equipment transport. The heavy equipment was used to skim and vacuum oil on the surface water, and to scrape and remove oiled soil and natural debris. These construction and removal actions included tree clearing.

2. Status of the Species

This section presents the biological and ecological information relevant to the formulation of the Biological Opinion. Appropriate information on the species' life history, habitat, distribution, and other factors necessary for its survival are included to provide background for the analysis in later sections of this Biological Opinion.

The Service listed the Indiana bat as an endangered species on March 11, 1967 (Federal Register 32 48:4001). The Service listed eleven caves and two mines in six states as Critical Habitat on September 24, 1976 (41 FR 41914). The Biological Assessment (Arcadis 2009), Indiana bat Recovery Plan (USFWS 2007), and the species 5-Year Review (USFWS 2009a) contain life history, biology, ecology, and threats for survival of the Indiana bat. Below is a summary of relevant information from these materials for this Biological Opinion.

The Indiana bat hibernates in clusters numbering up to the thousands within caves and mine sites (collectively known as hibernacula) scattered throughout central and northeastern United States during the winter months. There are 281 known hibernacula in 19 states. The bats emerge from the hibernacula starting in April and spread out throughout the forested landscape of central and northeastern United States during the summer months.

The bats have strong site fidelity to their summer range locations. The summer range includes daytime roosts, interim nighttime roosts, primary maternity roosts, alternative maternity roosts, and evening foraging areas. Individual bats can return to the same area if not the same roost trees year after year.

The male and female bat pairs separate during the summer and colonize different roosts during the daytime. The male bats roost individually or in small clusters during the summer. The female bats bear and raise their single pup along with other female bats during the summer as members of maternity colonies. There are 269 known maternity colonies in 16 states. Many more likely exist in areas that have not been surveyed. A single maternity colony may support tens of female bats and their young. Suitable roosts for daytime use and maternity use include trees with loose bark, crevices, and cavities that receive good solar radiation. The size of the area around the roost trees used by a maternity colony in southern Illinois and northern Missouri range from about 460 acres to 3,266 acres (Callahan *et al.* 1997, Carter and Feldhamer 2005).

During the summer, the bats emerge each night at dusk to forage on flying insects in a variety of upland and bottomland habitats. The bats leave the summer habitat between August and September to pair up and swarm (mating behavior) around the hibernacula before starting hibernation again in October.

The summer range for the Indiana bat includes the State of Illinois. There are no known maternity colonies in Wayne County, Illinois. There are several caves in east and southern Illinois known to contain hibernacula. Critical Habitat has been designated to the north in Illinois, to the east in Indiana, to the south in Kentucky, and to the west in Missouri.

The recovery criteria for delisting the Indiana bat are outlined below (USFWS 2007).

1. Permanent protection of a minimum of 50 percent of Priority 2 hibernacula in each Recovery Unit.

2. A minimum overall population estimate equal to the 2005 population estimate of 457,000.

3. Documentation that shows a positive population growth rate within each Recovery Unit over an additional five sequential survey periods (*i.e.* 10 years).

3. Environmental Baseline

Regulations implementing the Endangered Species Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area, which have already undergone Section 7 consultation, and the impacts of state and private actions, which are contemporaneous with the consultations in progress.

Environmental baseline analyses are used as the starting point from which to assess the effects of the action. In simplest terms, environmental baseline is the status of listed species or critical habitat within the action area given the response of these listed resources to past and present factors. Using the baseline analysis, the Service is able to tease out the effects anticipated to result from the action from those effects that are anticipated to occur regardless of whether the action is carried out.

The action for the endangered species consultation is the emergency response including heavy equipment use, construction of roads, dams, and the related tree clearing with summer habitat of the Indiana bat. Additional tree clearing may be necessary to complete the longer term remedial action (discussed further in Section 5 Cumulative Effects).

Action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For this consultation, the action area is defined as the entire emergency response zone.

There are not any known past or current Federal or non-Federal development projects at or near the action area that can affect local bats beyond the following local, regional, and range wide threats. The land use around the action area is row crop production so bats may be exposed to agricultural chemicals some of which reduce insect abundance or can be toxic to vertebrates. The action area includes oxbow wetlands and former channels of Elm River before it was

straightened. The altered floodplain floods frequently. The bats may be subjected to long periods of severe flooding which may affect tree use and insect production. There is upland and bottomland fragmentation in the surrounding landscape from public and private development projects.

The response workers and the Service observed many species of bats using the action area during the late summer months. The bats fed in large numbers on the flying insects that were attracted to the temporary lighting used to construct and operate the roads during the emergency response. There was not a survey conducted to determine the bat diversity at the action area. The action area is important to the recovery of the Indiana bat by supporting breeding adults during the summer. The Elm River bottomlands contain suitable habitat for the Indiana bat including a contiguous block of forested wetlands with suitable roost tree species, wetland foraging areas, and adjacent upland foraging areas. The juveniles that survive the summer season are recruited into the population and contribute to population growth.

The population size of Indiana bats was estimated at 560,975 in 1981 (USFWS 2009a). The total known Indiana bat population at the last census in 2007 was 468,260 bats (USFWS 2009a). The Service estimates a 10% decline in the total population size since the 2007 census (USFWS 2009b). The Service attributes the recent decline to the bat white-nose syndrome disease epidemic and the other traditional reasons. The other reasons include vandalism of winter cave habitat, hibernacula quality, human disturbance of wintering bats, natural hazards within caves, summer habitat loss, and chemical exposure (USFWS 2007 and USFWS 2009a).

4. Effects of the Action

The Effects of the Action section for emergency consultations analyzes the effects of the emergency response actions taken. It does not analyze the effects on the species from the discharge of oil during the incident per instructions in the Spills Memorandum of Agreement (USCG *et al.* 2001). The effects to the species from exposure to oil are often part of a remedial investigation or a natural resource damage assessment.

The total area of suitable habitat for the Indiana bat affected by the emergency response suggests that up to one Indiana bat female maternity colony and some individual male Indiana bats were affected. The total size of Indiana bat suitable habitat around the action area is about 233.3 acres (Arcadis 2009). The total acres of the tree clearing was about 7.38 acres out of the 233.3 acres (3%) (Arcadis 2009). The amount of summer habitat modification did not cause an appreciable change to the summer habitat quality because the tree clearing was limited to the narrow linear features of the roads at a small scale and may not be much greater than the natural variation of tree mortality related to the flooding regime. There is high potential for Indiana bats to find alternative suitable roosts within this summer habitat because this timber stand contains old growth target tree species throughout.

The tree clearing may have some beneficial effects for the Indiana bat. The beneficial effects include opening up the forest canopy, which improves tree sapling survival (Sammy and Antrobus 2005) and insect production.

A review of the tree species and size of trees that were removed as part of the emergency response action as provided in the Biological Assessment indicates that some tree species may serve as highly suitable roosts for the Indiana bat. The highly suitable trees are defined for this review as shagbark hickory (*Carya ovata*) at greater than a nine-inch diameter from wetland or bordering upland habitats. Shagbark hickory was selected from the mix of trees removed because this species has exfoliating bark as part of its normal growth. Nine inches was selected as a threshold diameter based on information in the recovery plan (USFWS 2007). Other tree species may have loose bark, crevices, or cavities; but the measures implemented for the emergency response had workers inspecting and avoiding the trees with loose bark or openings prior to timber removal. Seven trees out of 429 trees removed (1.6%) were shagbark hickory greater than nine inches in diameter. The shagbark hickory trees were removed before the fall departure dates for swarming and hibernation.

We anticipate that some individual Indiana bats may have been harassed or harmed (collectively known as take) by the tree cutting and removal that was conducted in the maternity season. We estimated a reasonable worst-case scenario of Indiana bat take by multiplying the number of maternity colonies that may be within the action area by a factor of 160. The factor of 160 represents an average value for the number of adult female Indiana bats and their young found in a single maternity colony for this part of the Midwest (USFWS 2007). We also added in the potential for harassment or harm of up to five male Indiana bats from the tree cutting and removal. Five was selected to represent average low density abundance for male bats due to their behavior to disperse as individuals over the summer range. Table 1 below outlines the estimated range of the take for the Indiana bats.

Table 1. Potential take of Indiana bats at the Spill Site, Illinois.

Area Affected [a]	Number of Colonies [b]	Maternity Colony Size [c]	Number of Male Bats [d]	Take [e]
7.38	1	160	5	165

[a] Number of forested acres cleared
[b] Potential number of colonies that can be supported within the affected area
[c] Average number of female bats and young in a maternity colony
[d] Potential average number of male bats that can be found around a maternity colony
[e] Take = (Area Affected X Number of Colonies Maternity Colony Size) + Number Male Bats

The estimated quantity of harassed or harmed bats may be an underestimate because the Indiana bat does use some of the other species of trees in the mix of trees kinds removed for roosts including the ash, maple, and oak species. The Indiana bat may use young trees including those down to five inches in diameter (USFWS *et al.* 2009).

The estimated quantity of harassed or harmed Indiana bats may be an overestimate for several reasons (USFWS 2007). Not all of the young may have survived the summer. The bats prefer roost trees exposed to solar radiation so closed canopy areas may not support maternity roosts. There is roost switching between primary and alternate maternity roosts. Roost trees wear out and new trees are selected. There is a low to moderate probability (but not zero) that any one

tree will contain a maternity roost because the species is rare, and there is a low probability that any bats died.

5. Cumulative Effects

Regulations implementing the ESA (50 CFR §402.14(g)(3) and (4)) require the Service to evaluate the cumulative effects on the listed species under consultation. Cumulative effects are defined as those effects of future private, or State actions, not involving Federal funding, that are reasonably certain to occur in the action area. We are aware of one State and private project that is reasonably certain to occur in the action area. The State and private project is the continued remediation of the contaminated soil and groundwater by Marathon with oversight by the Illinois Environmental Protection Agency. There will not be any cumulative effects from this project because the project proponents are committed to adopting Indiana bat effects avoidance measures by clearing suitable roost trees outside of the summer range use dates and only from very small areas.

6. Conclusion

After reviewing the biology of the species, status of the species, the environmental baseline condition, and the effects of the action, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the species.

We conclude that bats including the federally listed endangered Indiana bat may have been incidentally harassed or harmed by the otherwise authorized tree removal activities for the emergency response. However, based on the best available information, the take of the Indiana bats by the response actions when added to the reduced fitness or survival due to the environmental baseline conditions will not cause a detectable negative effect in reproduction or recruitment of the species in this region. The harassment or harm if present was near the end of the summer season which is past the birth and immature care phases of the reproductive cycle so the young bats were volant (capable of flight and caring for self). The loss of a primary maternity roost tree is not unique in that forest succession and storms may also cause the loss of roost trees.

There are not any known hibernacula in or close to the action area. Therefore, none will be affected. The Critical Habitat designated for this species is not in or close to action area. Therefore, none will be affected.

7. Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined to include significant habitat modification

or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior 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), take that is incidental to and not intended as part of the agency action is not considered to be prohibited under ESA provided that such take is in compliance with the terms and conditions of this incidental take statement.

The Service estimates that between zero and 165 Indiana bats may have been incidentally harassed or harmed because of the emergency response at the Spill Site. No mortality is expected to have occurred.

The Incidental Take Statement Section for emergency consultations documents the recommendations given to minimize take during the informal consultation process, the success of the agency in carrying out these recommendations, and the ultimate effect on the species. In this consultation, incidental take of bats occurred during the construction of roads and other tree clearing activities. There was effective coordination with the Service prior to the construction work, and therefore, the Federal agencies and designees adopted measures that minimized the take of Indiana bats. Take was unavoidable because it was necessary to remove trees to complete the emergency response actions to protect human health and the environment from further injury.

Terms and Conditions

Terms and conditions are not applicable for an emergency consultation.

Conservation Measures

Section 7(a)(1) of the ESA directs Federal agencies to further the purposes of the ESA by implementing conservation programs for the benefit of endangered and threatened species to the extent that the agencies have the authority to do so. The Service may make discretionary conservation recommendations to other Federal agencies to minimize or avoid future adverse effects on listed species or critical habitat. These recommendations may include assistance in recovery plan implementation, monitoring, and information collection efforts.

The Service recommends that partners and stakeholders enhance on-going spill contingency planning for USEPA Region 5. The Service, USEPA, U.S. Coast Guard, and State agencies are in the process of mapping sensitive type habitats in the Midwest as part of their long-standing effort to keep the Region 5 Regional Incident Contingency Response Plan up to date. These agencies should continue to meet and improve the information on endangered species in the regional incident contingency plans along with related area and subarea plans.

We can use instructions in the Spills Memorandum of Agreement (USCG *et al.* 2001) to help guide the development of endangered species information and related endangered species consultation for regional, area, and subarea spill incident contingency plans. First responders can then have information available to consider the potential for impacts to bats in future emergencies that include tree removal, by using the information in these incident contingency plans.

Reinitiation Notice

This concludes formal consultation on the actions outlined in this Biological Opinion. 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 covered species or critical habitat in a manner or to an extent not considered in this Biological Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the covered species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

Literature Cited

Callahan, E.V., R.D Drobney, and R.L. Clawson. 1997. Selection of summer roosting sites by Indiana bats (*Myotis sodalis*) in Missouri. Journal of Mammology, 78(3):818-825

Carter, C.C. and G.A. Feldhamer. 2005. Roost tree use by maternity colonies of Indiana bats and northern long-eared bats in southern Illinois. Forest Ecology and Management, 219:259-268

Sammy, K.L. and T.J. Antrobus. 2005. Relationships between gap makers and gap fillers in an Arkansas floodplain forest. Journal of Vegetation Science. 16:471-480

USCG, USEPA, USFWS, NOAA, and USDOI. 2001. Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act's National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act. Retrieved from http://www.fws.gov/contaminants/FWS_OSCP_05/fwscontingencyappendices/O-EndangeredSpecies/ESAMOAsignaturePDF.pdf

USFWS. 2007. Indiana bat(*Myotis sodalis*) recovery plan: first revision. April 2007. U.S. Fish and Wildlife Service, Great Lakes/Big Rivers Region, Ft. Snelling, MN. Retrieved from http://www.fws.gov/midwest/Endangered/mammals/inba/pdf/inba_fnldrftrecpln_apr07.pdf

USFWS. 2009a. Indiana bat (*Myotis sodalis*). 5-year review: summary and evaluation , approved September 9, 2006. U.S. Fish and Wildlife Service, Great Lakes/Big Rivers Region, Ft. Snelling, MN. Retrieved from http://www.fws.gov/midwest/endangered/clams/pdf/hepm5year06.pdf

USFWS. 2009b. Indiana Bat Hibernacula Database. Unpublished population and hibernacula-related data housed at the Bloomington, Indiana, Ecological Services Field Office, Bloomington, Indiana of the U.S. Fish and Wildlife Service

USFWS, InterState Mining Compact Commission, and USOSM. 2009. Range-wide Indiana bat protection and enhancement guidelines. U.S. Fish and Wildlife Service, InterState Mining Compact Commission, and the U.S. Office of Surface Mining. Retrieved from http://dnr.ky.gov/NR/rdonlyres/3720DA6F-9E8A-404B-B2CF-8A502CF97231/0/INBatPEPSept09.pdf