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A CAVE ASSESSMENT AND SUMMER MIST NET SURVEY AT 11 ADDITIONAL SITES FOR THE ENDANGERED INDIANA BAT ALONG THE PROPOSED PORTSMOUTH BYPASS PROJECT IN SCIOTO COUNTY, OHIO

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1.0 Regulatory Setting

The federal Endangered Species Act (ESA) [16 U.S.C. 1531 *et seq.*] became law in 1973 and provides for the listing, conservation, and recovery of endangered and threatened species of plants and wildlife. Under ESA, the U.S. Fish and Wildlife Service (USFWS) strives to protect and monitor the numbers and populations of listed species. Many states enacted similar laws.

Section 7(a)(2) of the Act states that each federal agency shall insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of designated critical habitat. Federal actions include (1) expenditure of federal funds for roads, buildings, or other construction projects, and (2) approval of a permit or license, and the activities resulting from such permit or license. This is true regardless of whether involvement is apparent, such as issuance of a federal permit, or less direct, such as federal oversight of a state-operated program.

Section 9 of the Act prohibits take of listed species. Take is defined by the Act as "*to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.*" The definition of harm includes adverse habitat modification. Actions of federal agencies that do not result in jeopardy or adverse modification, but that could result in a take, must be addressed under Section 7.

Prior to development of the Portsmouth bypass project, the Ohio Department of Transportation (ODOT) must comply with a variety of requirements for environmental protection, including compliance with ESA. Environmental Solutions & Innovations, Inc. (ESI) was contracted to complete a summer mist netting survey for the endangered Indiana bat (*Myotis sodalis*) within the bypass footprint in Scioto County, Ohio. Initially 10 sites were selected and netted (ESI-Schwierjohann and Brack, 2003), and after additional coordination between ODOT, CH2MHill, and the USFWS, Ohio Field Office, it was decided that an additional 11 sites should be netted. In addition, during filed netting studies, a "cave" was located and investigated for it potential use by bats.

ESI completed field efforts under Federal Endangered species permit TE 023664-10 and State of Ohio Division of Wildlife permit 216.

2.0 Project Setting

2.1 Location

The project site is in the Appalachian Plateau Physiographic Province of south-central Ohio (Figure 1). More specifically, the site is within the Shawnee-Mississippian Plateau. The area is characterized by high relief (400'-800' ASL). The Plateau is highly dissected with course- and fine-grained rock sequences and is considered the most rugged area in Ohio. Remnants of ancient lacustrine clay-filled Teays drainage system are extensive in lowlands but absent in uplands. The geology of the Plateau has developed from Devonian and Mississippian age shales, siltstones, and locally thick sandstones; a Pleistocene age sandy outwash of the Scioto River; Teays age Minford clay, and silt loam and channery colluvium (ODNR, 2003).

The bypass is intended to connect Ohio State Route 23 to Ohio State Route 52. The general footprint of the bypass runs west to east from Lucasville to Minford and then south to Wheelersburg. The footprint covers an area approximately 14.5 miles (23.3 km) long by 1.5 miles (2.4 km) wide. Primary drainage within the footprint comes from the Little Scioto River; Candy Run, Long Run, and Sweet Run creeks are also important watersheds for the area.

2.2 Regional Species Occurrence

The federally endangered Indiana bat is known from the region that includes the Portsmouth bypass project area. Winter hibernacula occur in nearby Adams and Brown counties in Ohio, and Carter County, Kentucky. Evidence of a maternity colony was recorded east of Scioto County in Lawrence County, Ohio. Both Scioto and Pike counties have records of summer, nonreproductive Indiana bats (Figure 2).

Figure 1. Ohio Physiographic Regions and the project area (Source: ODNR, 2003).

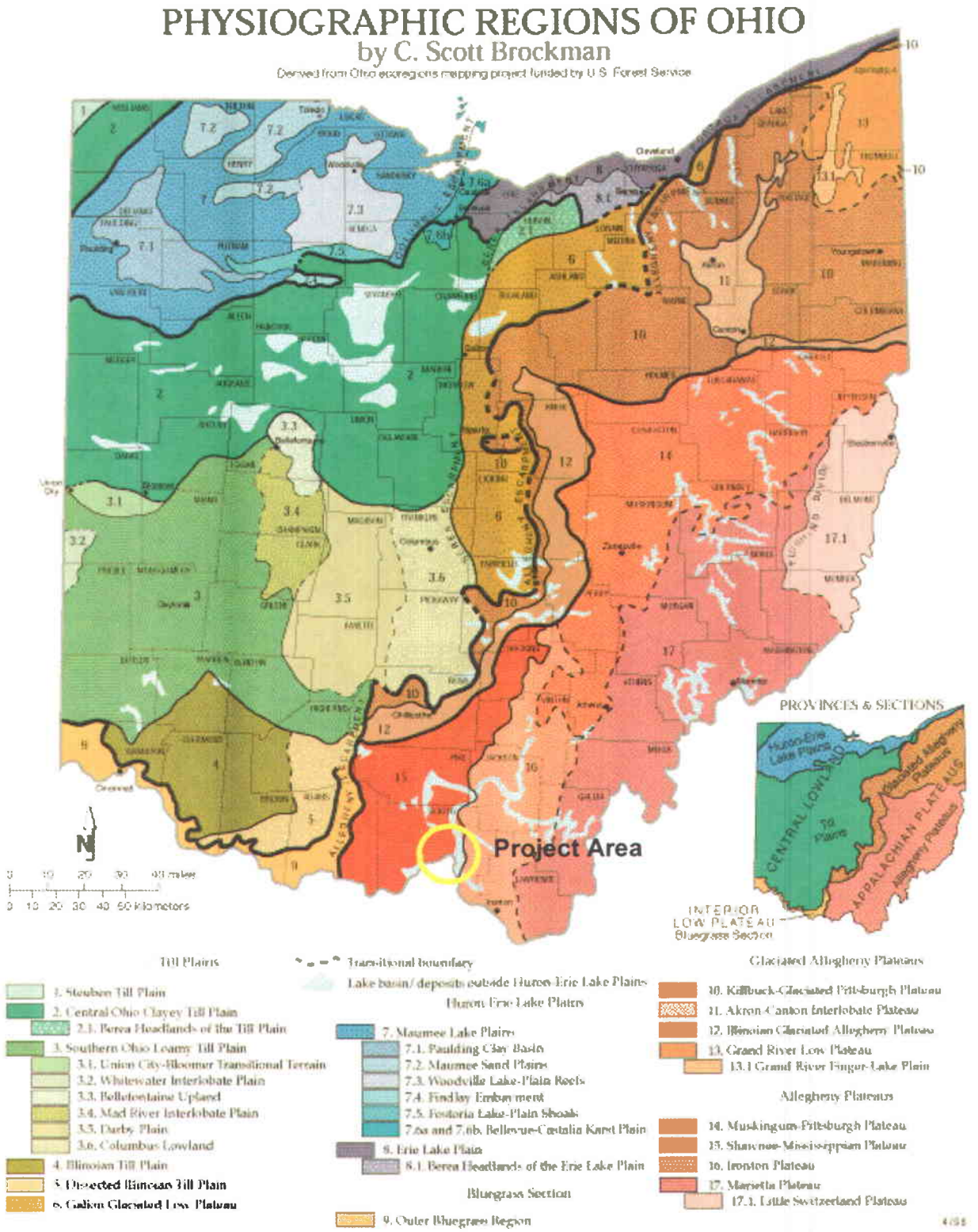

Figure 2. Counties near the project area with hibernacula, summer maternity, and other summer (nonreproductive) records for the Indiana bat (*Myotis sodalis*).

- County with Record of Indiana Bat Hibernacula Occurrence
- County with Record of Indiana Bat Summer Maternity Occurrence
- County with Record of Indiana Bat Other Summer (Nonreproductive) Occurrence
- County with Record of Indiana Bat Hibernacula and Other Summer (Nonreproductive) Occurrences
- State Boundary
- County Boundary

STATES WITH RECORDS OF INDIANA BAT OCCURRENCE

Recorded Species Occurrence

N W E S

Miles
10 0 10 20 30

Sources: USFWS, Indiana Bat Revised Recovery Plan, Agency Draft, 1999.

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3.0 Ecological Setting

The USFWS listed the Indiana bat as endangered on 11 March 1967. The current total population of Indiana bats is estimated at 350,000 individuals (USFWS, 1999). This is less than half the estimated population of 1960. Long-term, detailed documentation of population changes are lacking in most areas, although Indiana is an exception (Brack et al., 2003; Brack et al., 1984; Brack and Dunlap, 2003; Johnson et al., 2002). Summer habitat losses (USFWS, 1999) and winter disturbance (Johnson et al., 1998) are believed to have contributed to the decline.

Federal Register Documents

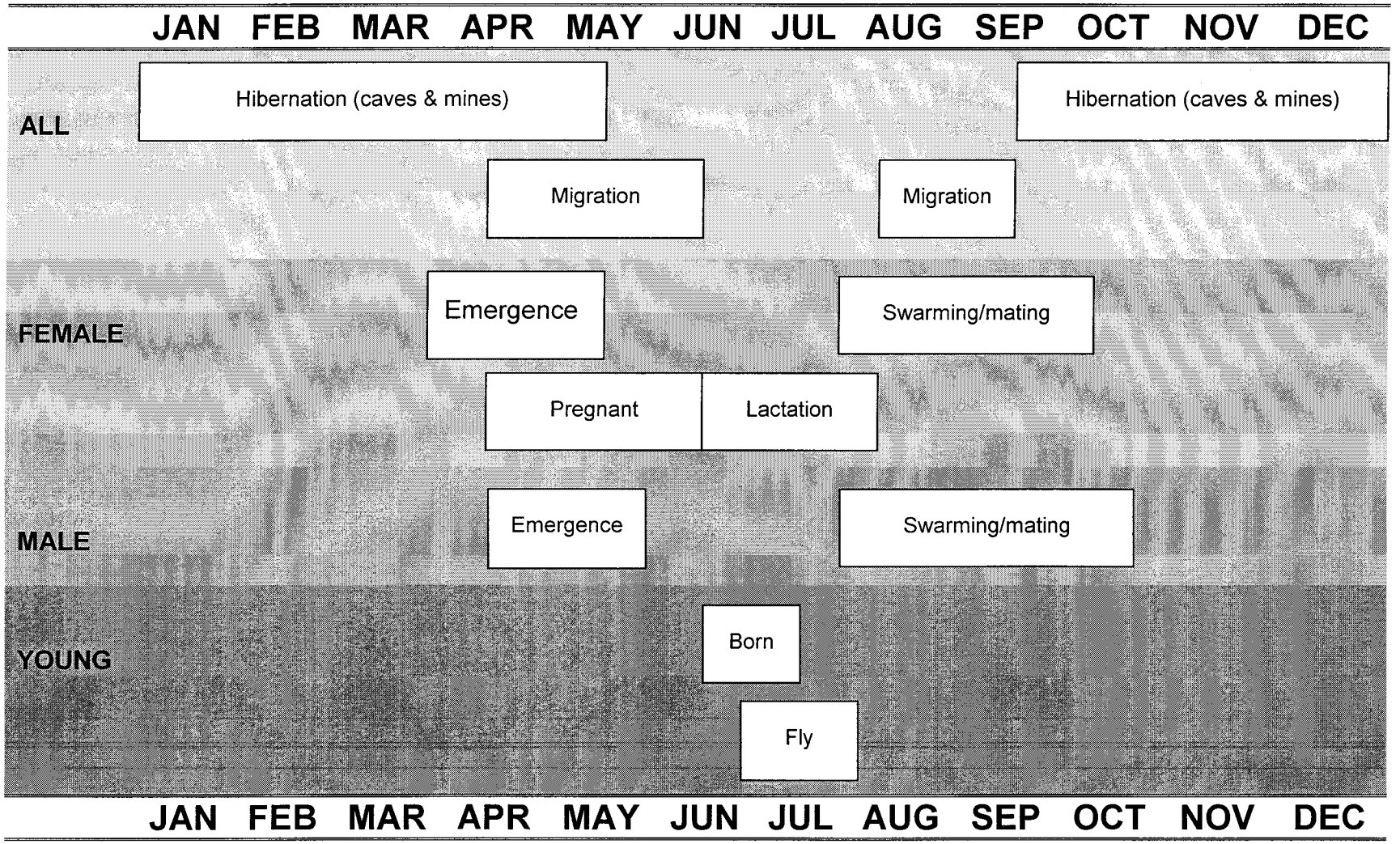
41 FR 41914; 24 September 1976: Final Critical Habitat, Critical habitat—mammals
40 FR 58308, 58312; 16 December 1975: Proposed Critical Habitat, Critical habitat—mammals
32 FR 4001; 11 March 1967: Final Listing, Endangered

Indiana bats are "tree bats" in the summer and "cave bats" in winter. A detail life history is provided in the U.S. Fish and Wildlife Service Recovery Plan (1999), Brack (1983), and LaVal and LaVal (1980). Figure 3 provides a chronology of seasonal activities discussed in the following paragraphs.

The winter range of the Indiana bat is restricted to regions of well-developed limestone caverns, which serve as hibernacula. Most hibernacula are in caves, but abandoned mines are sometimes used. There are large populations of Indiana bats in only a few caves; most hibernacula contain only a few bats. Large populations of bats hibernate in caves in Indiana, Kentucky, and Missouri (over 82% of the known population). Smaller populations are known from Alabama, Arkansas, Connecticut, Georgia, Illinois, Iowa, Maryland, Massachusetts, Mississippi, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, and West Virginia. Although the winter range is large, the species is restricted to approximately 135 known hibernacula.

Brack (3D/I, 1996) documented a population of nearly 9,300 Indiana bats hibernating in a mine in Preble County, Ohio. The most recent survey (ESI-Brown and Brack 2002) indicated that the number of bats hibernating in the mine has remained stable since first discovered. Spring (ESI-Little et al., 2001) use of coal mines by the Indiana bat in Virginia, and autumn use in Ohio (ESI-Brack and Little, 2001) have recently been documented. Such use may be associated with autumn swarming, winter hibernation, and spring staging, or it may represent use during seasonal

Figure 3. Seasonal chronology of Indiana bat activities.



migration or simply occasional visitation unrelated to specific seasonal events (i.e., vagrants). In Ohio, sampling of the mine the following spring failed to produce any Indiana bats, thereby failing to support the hypothesis that the mine is a hibernaculum. In Indiana and Virginia, individual Indiana bats have been found wintering in caves that were not subsequently used by any Indiana bats for hibernation, indicating that individual Indiana bats, like many species of bats, are occasionally found in caves and mines that are not suitable for or support populations of hibernating bats (Brack et al., 2003; ESI Brack, 2000).

Indiana bats hibernate from mid-November to mid-April. Hibernating Indiana bats usually form dense clusters on cave ceilings in portions of the cave where winter temperatures are suitable. Initially this temperature was believed to be 4 - 8°C during mid-winter, but was supported with scant data. Recent analysis of long-term data in hibernacula with increasing numbers of bats indicates the optimal range appears to be closer to 6 - 8°C (Brack and Dunlap 2003). Clusters are not sexually segregated.

Hibernation by bats is an adaptation that allows for survival through the winter months when food and water are not available. Mammalian hibernation consists of periods of hibernation interrupted by periodic, spontaneous arousals. Bats frequently move during arousal, and thus are able to change the microenvironment to which they will be exposed during the next period of hibernation. The duration of the period of hibernation between arousals varies by species (Brack, 1979; Brack and Twente, 1985; Twente et al., 1985), and is affected by temperature.

Female Indiana bats leave hibernacula earlier in spring (beginning in mid-April) than do males (peak of departure in early May). This part of spring activity is referred to as staging. Some males remain near hibernacula throughout summer while others migrate to distant areas (Whitaker and Brack, 2002). When female Indiana bats emerge from hibernation, they migrate up to several hundred miles to maternity colonies. Females form nursery colonies under exfoliating bark of dead trees, or living trees such as shagbark hickory *(Carya ovata)* in upland or riparian forests. A single maternity colony typically consists of 25 to 100 adult females. Maternity colonies have been found in many species of trees, indicating that it is tree form, not species that is important for roosts. Some species of trees in which roosts have been documented include slippery elm (*Ulmus rubra*), American elm (*U. americana*), cottonwood (*Populus deltoides*), northern red oak (*Quercus rubra*), post oak (*Q. stellata*), white oak (*Q. alba*), shingle oak (*Q. imbricaria*), sassafras (*Sassafras albidum*), sugar maple (*Acer saccharum*), silver maple (*A. saccharinum*), green ash (*Fraxinus pennsylvanica*), and bitternut hickory (*Carya cordiformis*).

Since Indiana bat roosts typically are located in dead or dying trees, they are often ephemeral. Roost trees may be habitable for one to several years, depending on the species and condition of the tree (Callahan et al., 1997). In addition, a single colony of bats moves among roosts within a season. Therefore, numerous suitable roosts

may be needed to support a single nursery colony (Foster and Kurta, 1999; Kurta et al., 1993). It is not known how many alternate roosts are required to support a colony within a particular area, but large tracts of mature forest containing large trees increases the probability that suitable roost trees are present. Indiana bats exhibit strong site fidelity to summer roosting and foraging areas, returning to the same area year-after-year.

Reproductive phenology is likely dependent upon seasonal temperatures and the thermal character of the roost (Humphrey et al., 1977). Like many other bats, Indiana bats are thermal conformists (Henshaw, 1965), with prenatal, neonatal, and juvenile development heavily temperature dependent (Racey, 1982). Cooler summer temperatures associated with latitude or altitude likely affect reproductive success and therefore the summer distribution of the species (Brack et al., 2002).

Females are pregnant when they arrive at maternity roosts. Fecundity of the species is low with females producing only one young per year. Parturition typically occurs between late June and early July. Lactating females have been caught from 11 June to 29 July in Indiana, from 26 June to 22 July in Iowa, and between 11 June and 6 July in Missouri (Brack, 1983; Clark et al., 1987; Humphrey et al., 1977; LaVal and LaVal, 1980). Juveniles become volant between early July and early August.

Indiana bats may travel several miles to forage. Instances where individuals from maternity colonies traveled 2.5 miles in Illinois (Gardner et al., 1991), and summer males traveling 3.1 miles in Missouri (LaVal and LaVal, 1980) have been documented. Brack (1983) observed foraging light-tagged bats within 2 miles of caves used during the autumn swarming period.

Indiana bats forage in upland and floodplain forest (Brack, 1983; Humphrey et al., 1977; LaVal et al., 1977; LaVal and LaVal, 1980; Gardner et al., 1991). Foraging activity is concentrated around the foliage of tree crowns, and although the bats may forage in other areas, it is quantitatively and qualitatively less important (Brack, 1983). Indiana bats often use stream corridors and other linear woodland openings as flight corridors from roosts to foraging areas.

Brack and LaVal (1985) referred to the Indiana bat as a selective opportunist that often eats similar types of prey when readily available. However, components of the diet do vary by habitat, geographic location, season, and sex or age of the bat (Kurta and Whitaker, 1998; Brack and LaVal, 1985; Brack, 1983; Belwood, 1979). In Missouri, Brack and LaVal (1985) noted that terrestrial-based insects, e.g., moths (Order Lepidoptera) and beetles (Coleoptera), were most often eaten, logically as a result of treetop foraging. The proportion of aquatic insects eaten [e.g., flies (Diptera), caddisflies (Trichoptera), and stoneflies (Plecoptera)] was small and influenced by the lunar cycle.

Indiana bats begin to arrive at hibernacula in late August (Figure 3) and engage in a behavior referred to as swarming (Cope and Humphrey, 1977). Early during autumn swarming, bats visit hibernacula at night but may day-roost in woodlands. As the season progresses, more bats roost in hibernacula caves. Males become active first in mid-August. Females begin arriving in late August. By September, numbers of swarming females peak, although the male may be more common since males frequent the swarming site more than females. By late September, many females are hibernating; males remain active until mid-October or later, apparently in an effort to breed late-arriving females. Swarming chronology likely is influenced by temperature and precipitation.

Swarming is an important part of the Indiana bat's life cycle and is when most copulation occurs (Hall, 1962). However, Richter et al. (1993) postulated that males lacking sufficient fat to survive winter hibernation may remain active, seeking opportunities to mate well into the winter in a final effort to reproduce before they die. Females store sperm through winter hibernation, and fertilization is delayed until spring (Wimsatt, 1944). It is not known whether juvenile females mate their first autumn. Limited mating may occur in spring (Hall, 1962).

4.0 Methods

4.1 Site Selection

Survey sites were selected to provide broad coverage of the project area, focusing on areas that provided larger trees and riparian corridors suitable for travel and forage. Sites were selected using topographic maps, aerial photographs, and reconnaissance survey information on potential Indiana bat habitat collected by CH2MHill biologists. Sites were also interspersed with 10 sites previously netted (ESI-Schwierjohann and Brack, 2003).

4.2 Mist Netting

Efforts to survey for endangered bats are difficult to standardize because of the large amount of variability that exists in a field situation. However, a number of practices used for summer surveys for Indiana bats have provided structure for implementation of netting guidelines provided by the U.S. Fish and Wildlife Service (1999) in the most recent (Agency Draft) revision of the Indiana Bat Recovery Plan. Those guidelines (Table 1) were employed at the 11 net sites surveyed.

Eleven mist net sites were selected and operated for two nights each from 26 July to 6 August 2003. Each site consisted of two net sets run for two nights, for a total of four net nights per site. Net placement was based upon canopy cover, presence of a flight corridor, water, and conditions near the site. Nets were set to maximize coverage of flight paths used by Indiana bats along suitable corridors. Site selection was based upon an expectation of greatest bat activity and an effort to provide survey coverage of the permit area. Nets are often placed over streams, which are used as travel corridors and sometimes for foraging. In upland areas, road ruts or other areas of standing water frequently produce high capture rates. The location and specific orientation of each net was determined in the field.

Mist net sites were also selected based upon habitat characterizations described for the Indiana bat in current literature and experience of ESI personnel capturing this species. Habitat with the following characteristics were selected to the degree they were available:

- Large trees (>16 inches dbh) for maternity roosts
- An open canopy, apparently important for warming roost sites
- An open, uncluttered understory, used for travel and forage

To insure compliance with weather conditions outlined in the Table 1, temperature, percent cloud cover, wind, and rainfall were monitored and recorded hourly while mist netting.

Table 1. Netting guidelines.

1. Netting Season: 15 May to 15 August, when Indiana bats occupy summer habitat.
2. Equipment (Mist Nets): constructed of the finest, lowest visibility mesh commercially available – monofilament or black nylon – with the mesh size approximately 1½ inch (1¼ –1¾) (38 mm).
3. Net Placement: mist nets extend approximately from water or ground level to tree canopy and are bounded by foliage on the sides. Net width and height are adjusted for the fullest coverage of the flight corridor at each site. A "typical" net set consists of three (or more) nets "stacked" on top of one another; width may vary up to 60 feet (20 m).
4. Net Site Spacing:
   - Streams – one net site per 0.5 mile (1 km)
   - Land Tracts – two net sites per 250 acres (1 square km)
5. Minimum Level of Effort Per Net Site:
   - Two net locations (sets) per net site, with locations (sets) at least 100 feet (30 m) apart
   - Two (calendar) nights of netting
   - At least three net–nights (1 net–night = 1 net set deployed for 1 night); typically, two net sets are deployed at one site for two nights, resulting in four net-nights
   - Sample Period: begin at dusk and net for 5 hours (approximately 0200h)
   - Nets are monitored at approximately 20-minute intervals
   - No disturbances near the nets between checks
6. Weather Conditions: net only if the following weather conditions are met:
   - No precipitation
   - Temperature $\geq$ 10°C (50°F)
   - No strong winds
7. Moonlight: avoid net sets with direct exposure to a moon ½ -full or greater – typically by utilizing forest canopy cover

Source: U.S. Fish and Wildlife Service, 1999

4.3 Bat Capture

The netting setup allows bats to be caught live and released unharmed near the point of capture. Bats were identified to species using a combination of morphological characteristics (e.g., ear and tragus, calcar, pelage, size/weight, length of right forearm, and overall appearance of the animal). The species, sex, reproductive condition, age, weight, length of right forearm, and time and location/net site of

capture were recorded for all bats captured. Age (adult or juvenile) of bats is determined by examining ephiphyseal-diaphyseal fusion (calcification) of long bones in the wing. Weight was measured to 0.1 grams using a Pesola spring scale. Length of the right forearm of each bat was measured to the nearest 1.0 mm using either dial calipers or metric ruler. The reproductive condition of captured bats was classified as non-descended male, descended male, non-reproductive female, pregnant female (based on gentle abdominal palpation), lactating female, or post-lactating female.

Bats were not banded. Bat processing and data collection was typically completed within 30 minutes of the time the bat was removed from the net. Data, recorded in the filed are provided in Appendix A.

4.4 Habitat Characterization of Net Sites

Habitat assessment at net sites focused on features indicative of suitability for Indiana bats. A habitat description of each net location was completed (Appendix A). The emphasis of this description was habitat form: size and relative abundance of large trees and snags that potentially serve as roost trees, canopy closure, understory clutter/openness, distance to water, stream or pond characteristics (if a net was placed over them), and flight corridors. Habitat form was emphasized because the Indiana bat roosts in many species of trees. Tree species composition was included because it provides insight to edaphic conditions of each site.

Habitat characterization identifies components of canopy and subcanopy layers. Trees that reach into the canopy are canopy trees, regardless of their diameter/size. As defined in the Indiana Bat Habitat Suitability Index Model (3D/Environmental 1995), dominant trees are the large trees in the canopy (>16" dbh) that have the greatest likelihood of being used by maternity colonies of Indiana bats. Many smaller trees are often also found in the canopy, and in some situations, the canopy can be entirely composed of small-diameter trees. ESI's habitat characterization identifies dominant and subdominant elements of the canopy.

The subcanopy vegetation layer is well defined in classical ecological literature. It is that portion of the forest structure between the ground vegetation (to approximately 2 feet (0.6 m) and the canopy layers, usually beginning at about 25 feet (7.6 m).

Vegetation in the understory may come from:

- Lower branches of overstory trees
- Young overstory trees
- Small trees and shrubs that are confined to the understory

The amount of vegetation in the understory is termed clutter. Many species of bats, including the Indiana bat, tend to avoid areas of high clutter.

Other site-specific parameters pertinent to assessing the quality of the habitat were also recorded such as distance to water, stream habitat (if present), standing water in an upland site, and travel corridors – or lack thereof.

Each net site was documented with a sketch.

4.5 Investigations at a Cave in the Project Area

During summer netting surveys, people living in the project area directed us to a cave that was in the project vicinity. This "bat cave" as it was known by local people, was located at 38°45"51.4" north latitude and 82°52"40.3" west longitude in a bluff of a railroad cut (Figure 4). Because the entrance to the cave was on the bluff face, it could not be readily trapped or netted so vertical caving equipment was used to enter the cave. On 27 September 2003, the cave was surveyed to determine if bats were currently or could potentially use the cave, e.g., the presence of bats, droppings, air movement, obstructions that might hinder use by bats, or indications that bats had not used the cave such as undisturbed spider webs.

4.6 Statistical Analysis of Capture Data

The species diversity in the project area was examined with the species diversity index (SDI) = $1/\sum P_i^2$, where P_i is the proportion of bats belonging to species i, (MacArthur, 1972). This index has an advantage over other commonly used indices in that it provides an estimate of the number of equally represented species in the catch. Chi-square analysis was used to compare the catch of males and females.

5.0 Results

5.1 Weather and Temperature

In general, precipitation, humidity, and cloud cover were higher than normal for the Portsmouth area during the survey period (Weather Underground, 2003), as they were for most of the 2003 netting season. Nevertheless, weather parameters were within netting guidelines. Days were sometimes overcast, humid, and rainy. Rain sometimes occurred in late afternoon, prior to netting. Evening skies sometimes were overcast and fog occurred upon occasion. Nighttime lows ranged from 62 to 73°F, and high temperatures ranged from 68 to 84°F during the project period. The spread of temperatures between high and low ranged from 2 to 13 degrees. Appendix A contains completed Weather Data Sheets.

Start/End Dates (2003)	High Temp. °F	Low Temp. °F
26 July	80	67
6 Aug	76	63

5.2 Mist Netting and Site Selection

Eleven net sites were surveyed for a total of 44 net nights. Survey sites were selected to provide broad coverage of the project area, focusing on areas that provided larger trees and riparian corridors suitable for travel and forage. Sites were selected using topographic maps, aerial photographs, and on-site reconnaissance survey, and were interspersed with 10 sites previously netted (ESI-Schwierjohann and Brack, 2003). Sites were numbered beginning at 11 (Figure 4).

5.3 Bat Captures

No endangered bats were captured.

A total of 30 bats of four species were captured at 11 net sites (Table 2). Most reproductive adult females had completed lactation, and capture of juveniles indicated that young of the year were volant. The big brown bat (*Eptesicus fuscus*) was the most frequently captured species, followed by the red bat (*Lasiurus borealis*), eastern pipistrelle (*Pipistrellus subflavus*), and little brown bat (*Myotis lucifugus*). Species diversity was relatively low with a Diversity Index value of 3.5. Nine reproductive females (all species combined) were captured versus six adult males, which is not significantly different than random ($\bar{x}$ = 0.6000; P = 0.4386).

N
W E
S

Figure 4. Summer 2003 Indiana bat survey sites for Portsmouth bypass project, Scioto County, Ohio.

Miles
1 0 1 2

Survey Site Location
Cave Location
Valley Alternative
Hill Alternative

Project No. 096
Task 04

Base Map: USGS 30 x 60 Minute Series (1:100,000)
Topographic Map - Ironton, OH-KY-WV (enlarged)

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Table 2. Bat captures from 26 July to 6 August 2003 for the Portsmouth bypass project, Scioto County, Ohio (sites 11 – 21).

Species	Male	Female				Escape[5]	Total
		L[1]	PL[2]	NR[3]	Juv.[4]		
Eptesicus fuscus	5		6	2	2	1	**16**
Pipistrellus subflavus		1			2		**3**
Myotis lucifugus	1		1	1			**3**
Lasiurus borealis			1	2	4	1	**8**
Total	**6**	**1**	**8**	**5**	**8**	**2**	**30**

[1]L=lactating; [2]PL=Post lactating; [3]NR=non-reproductive; [4]Juv = Juvenile; [5]Escape=escaped from net before processing was completed

Two bats escaped before sex and morphometric data were collected, although they were identified to species.

5.4 Habitat Assessment

Approximately half of the project area is forested. The remaining area is heavily affected by suburban development and agricultural operations. Net sites were over travel corridors formed by stream or other linear openings such as roadways. Net sites were typically near developed areas and/or agricultural operations. Overall, net sites were classified as having open to moderately closed canopies, moderately closed understories, and a relatively low abundance of large trees. Based on these net site characteristics, the habitat is viewed as being poor to moderate with low roost site potential. Appendix A contains completed Net Site Habitat Description Data Sheets.

5.5 Cave Habitat

The cave consisted of two side-by-side openings. Facing into the cave, the opening on the left was about 4 feet in diameter and unobstructed by vegetation. This passage narrowed quickly and ended within approximately 30 feet. No air was moving into or out of the passage. No bats were found in the passage. Several (<10), relatively fresh, feces were found scattered within the entrance. These were probably from one or a couple bats that had recently night-roosted within the entrance.

The second (right) entrance was similar in size. No bats or feces were found, and no air movement was detected. The total length was two to three times that of the left side, and included two vertical drops of 6 to 10 feet each. Most of the passage was extremely narrow, barely allowing passage of surveyors. The passage was explored until the end could be seen.

6.0 Discussion and Conclusions

Netting efforts provided no evidence that endangered Indiana bats use the project area during summer months. The species complement, diversity, and number of bats captured in the project area was less than in earlier studies (ESI-Schwierjohann and Brack, 2003), but was nevertheless relatively typical for the geographic location and type of habitat. The disparity between the relative bat capture success of the two study periods may be explained by the fact that the "choicest" habitat was surveyed during the first set of netting. All species caught were also caught during earlier sampling. Perhaps the most surprising absence is the northern bat (*M. septentrionalis*), which was relatively common in the earlier sample and is typically a common bat in many woodland habitats. The little brown bat (*M. lucifugus*) does form maternity colonies in trees and sometimes uses habitat similar to that of the Indiana bat, although this species often roosts in man-made structures and sometimes shows a propensity to foraging near or otherwise using streams and other bodies of water. One species, the silver-haired bat (*Lasionycteris noctivagans*) is a migrant that would not be present during the time sampling was completed.

No bats were found in the cave, although evidence of meager night roosting use was found. The cave does not posses the physical characteristics typical of hibernacula used by populations of bats. The length and volume are generally unsuited for producing an environment suitable for hibernation. One or a couple big brown or eastern pipistrelle bats may occasionally use the cave during hibernation. Studies suggest that both species are very variable in the winter habitats they use, and in Indiana, Brack et al. (2003) found eastern pipistrelles in a greater diversity of cave types than any other species.

Bryan and Kiser (1996) caught 11 bats of three species over three nights of netting north of the Portsmouth bypass project site in Pike County. All three species (big brown bat, eastern red bat, and eastern pipistrelle) were also caught during the current project and all are commonly found in a variety of habitats, including open/edge and developed areas. They do not form maternity colonies in large trees, as does the Indiana bat (*M. sodalis*).

In contrast to the earlier study in the project area, more reproductive females were captured than males, although the difference was not significant. Nevertheless, poorer habitats sometimes produce fewer reproductive females with a higher energy and nutritional demand. A low female capture rate may indicate a poor quality of habitat.

Habitat for the Indiana bat within the project area at sites netted was of relatively low value. Ecological impacts from natural and man-made disturbances were evident throughout the project area. An ice storm during the previous season destroyed much of the forest canopy in many areas. The storm also felled many snags that could have served as potential roost sites. Due to storm damage and the early successional stage of most forested areas, understory clutter was typically high and unfavorable for bat activity.

Streams in the project area were heavily impacted by land use in surrounding areas. All showed signs of erosion and some streams had been dredged. Cattle often had access to streams, leading to high sediment loads. ATV trails along and through streams also increased sediment loads and erosion. Many streams had only narrow bands (sometimes a single row) of small- to medium-sized trees buffering them from agricultural fields and or maintained areas (e.g., roads, lawns, parking areas). Some had no buffer. Cursory examination of flora and fauna of the stream ecosystem revealed apparent low diversity and density.

7.0 Literature Cited

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Appendix A

Completed project data sheets

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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 27 July 2003 **Biologist:** LaMountain, Jeff Catt
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 53' 441" Longitude: W 82° 58' 272"
Site Name/#: 11 **Waypoint Name:** ODOT 14
Quad.: _____ **Range:** _____ **Township:** _____ **Sec.:** _____ **¼ Sec.:** _____
Distance to water:

ESTIMATED STREAM CHARACTERISTICS:

Bank Height: _____ Channel Width: _____ Stream Width: _____
Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☐ Bedrock ☐ Silt/mud other _____
Average Water Depth: _____ Clarity: ☐ High ☐ Moderate ☐ Low

VEGETATION:

Estimated Canopy Closure: ☒ Closed ☐ Moderate ☐ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 12dbh Sm 9 dbh
1. Acer saccharum
2. _____
3. _____
Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both
Roost Tree Potential for the Area is: ☐ High ☒ Moderate ☐ Low
Subdominant Overstory Species (<38cm/15"):
1. Acer saccharum 2. _____ 3. _____
Relative Abundance of Dominant vs. Subdominant: 85% vs. 15%
Description of Overstory Habitat Form:
Mixed deciduous
Subcanopy Clutter: ☐ Closed ☐ Moderate ☒ Open
Is Subcanopy Vegetation Lay Comprised Largely of: ☐ Lower Branches of Canopy Trees?
☒ Saplings ☐ Shrubs
Dominant Understory Species: 1. Acer saccharum
2. Oxydendrum arboreum
3.
Description of Habitat Form:
Herbaceous Cover: Polygonum sp., Poison Ivy, Stinging Nettle, Bottlebrush grass, christmas fern

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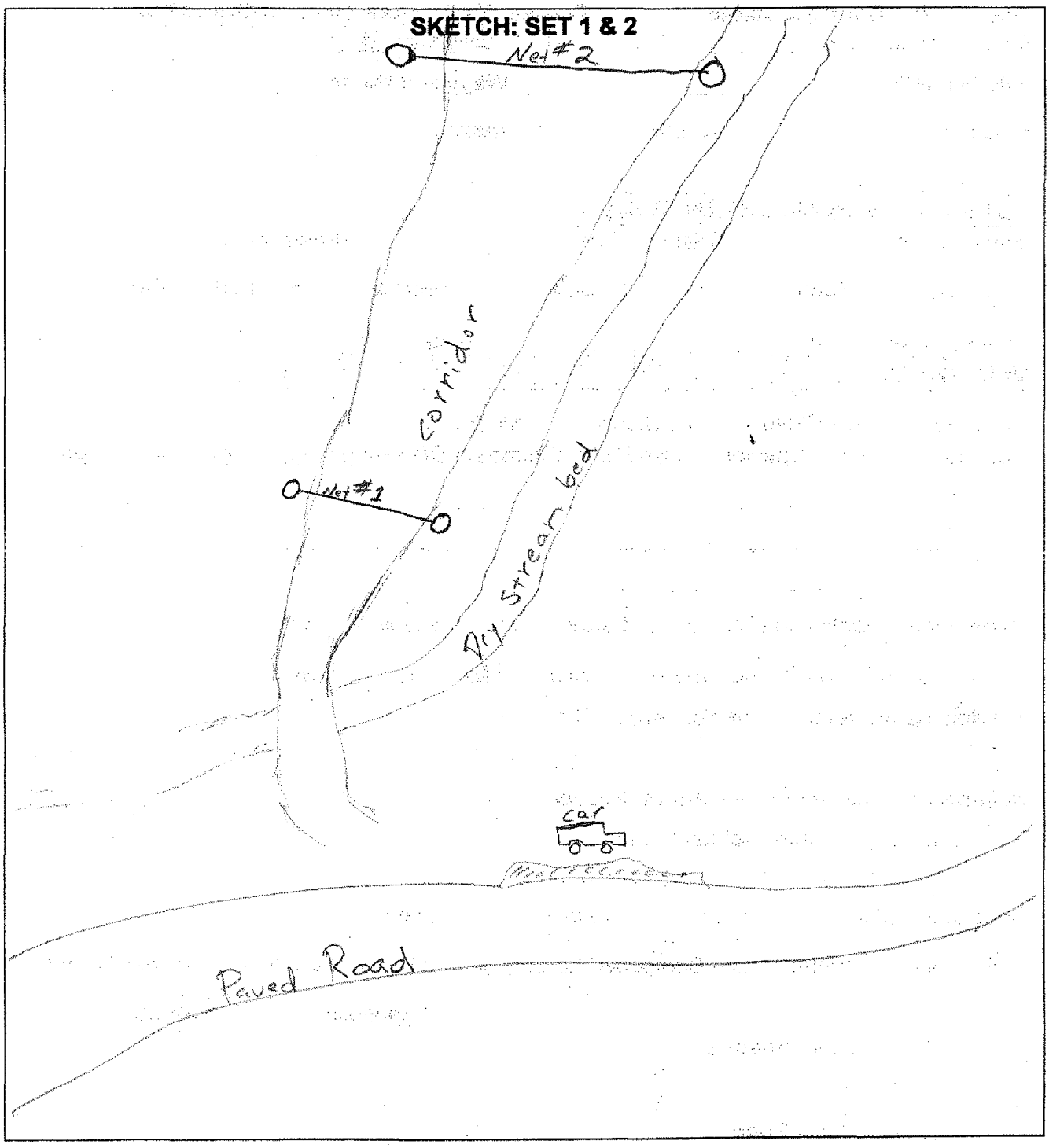
NET SITE HABITAT DESCRIPTION (Continued)

State: OH **County:** Scioto **Project Name and #:** ODOT CH2Mhill/ Pesi 096.04

Site Name/#: 11 **Waypoint Name:** ODOT 14

SKETCH: SET 1 & 2



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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 02 August 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38 · 52 · 440 " Longitude: W 82 · 58 · 250 "
Site Name/#: 12 **Waypoint Name:** ODOT 17
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** _____
Distance to water:

ESTIMATED STREAM IMPACTED PARAMETERS

Bank Height: 0.5m Channel Width: 18 Ft Stream Width: 15 Ft
Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☒ Bedrock ☐ Silt/mud other _____
Average Water Depth: 1 Ft Clarity: ☐ High ☒ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate ☐ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 16 dbh Sm 12 dbh
1. Acer saccharum
2. Plantanus occidentalis
3. _____
Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both
Roost Tree Potential for the Area is: ☐ High ☒ Moderate ☐ Low
Subdominant Overstory Species (<38cm/15"):
1. Fagus americana 2. _____ 3. _____
Relative Abundance of Dominant vs. Subdominant: 90% vs 10%
Description of Overstory Habitat Form:

Subcanopy Clutter: ☑ Closed ☐ Moderate ☐ Open
Is Subcanopy Vegetation Lay Comprised Largely of: ☑ Lower Branches of Canopy Trees?
☐ Saplings ☐ Shrubs
Dominant Understory Species: 1. Acer saccharum
2.
3.
Description of Habitat Form:

Herbaceous Cover:

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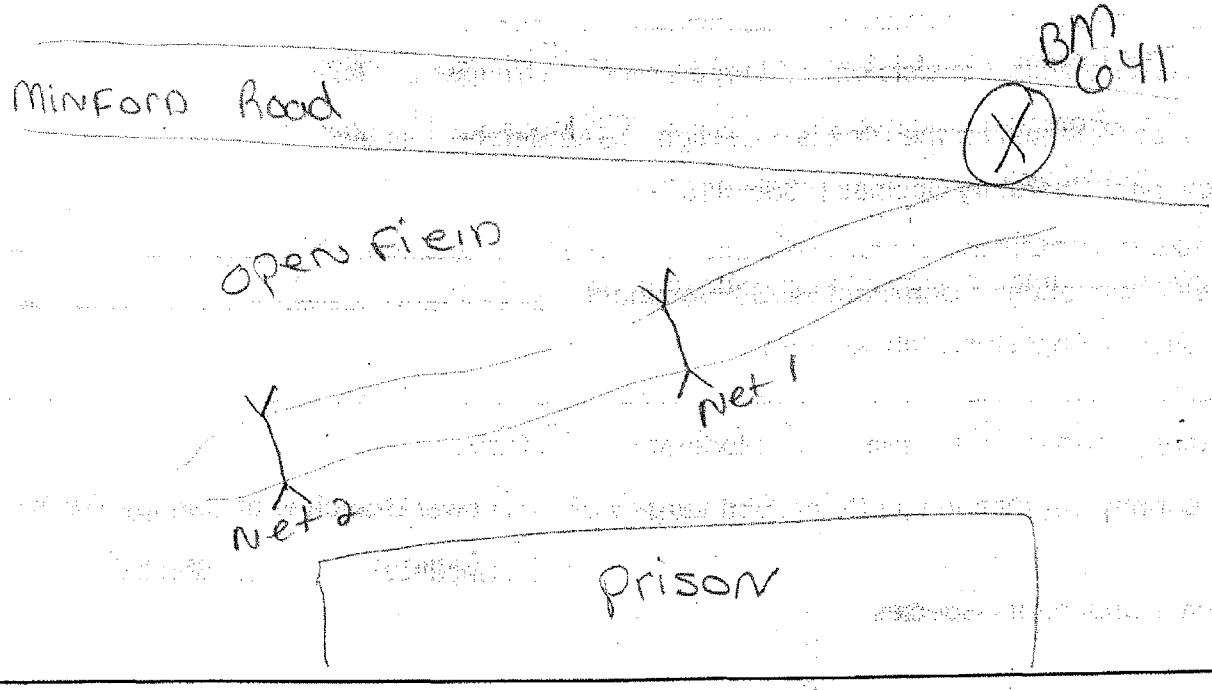
NET SITE HABITAT DESCRIPTION (Continued)

State: OH County: Scioto Project Name and #: ODOT CH2Mhill/ Pesi 096

Site Name/#: 12 Waypoint Name: ODOT 17

SKETCH: SET 1 & 2



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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 31 July 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 52' 079" Longitude: W 82° 57' 336"
Site Name/#: 13 **Waypoint Name:** ODOT 16
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** ____
Distance to water:

ESTIMATED STREAM CHARACTERISTICS:

Bank Height: 1.5m Channel Width: 20 feet Stream Width: 2 to 20 feet
Substratum: ☐ Sand ☐ Gravel ☒ Cobble ☐ Bedrock ☐ Silt/mud other _____
Average Water Depth: 1m Clarity: ☒ High ☐ Moderate ☐ Low

VEGETATION:

Estimated Canopy Closure: ☐ Closed ☒ Moderate ☐ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: ___dbh Sm ___dbh
1. Platanus occidentalis
2. Betula nigra
3. Carya ovata
Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both
Roost Tree Potential for the Area is: ☐ High ☒ Moderate ☐ Low
Subdominant Overstory Species (<38cm/15"):
1. Acer saccharum 2. _____ 3. _____
Relative Abundance of Dominant vs. Subdominant: 85% vs 15%
Description of Overstory Habitat Form:

Subcanopy Clutter: ☐ Closed ☒ Moderate ☐ Open
Is Subcanopy Vegetation Lay Comprised Largely of: ☒ Lower Branches of Canopy Trees? ☐ Saplings ☐ Shrubs
Dominant Understory Species: 1. Betula nigra 2. Acer saccharum 3. Carya ovata
Description of Habitat Form:

Herbaceous Cover: Multiflora rose, Polygonum sp., wild lettuce, Coreopsis major, Virginia creeper,

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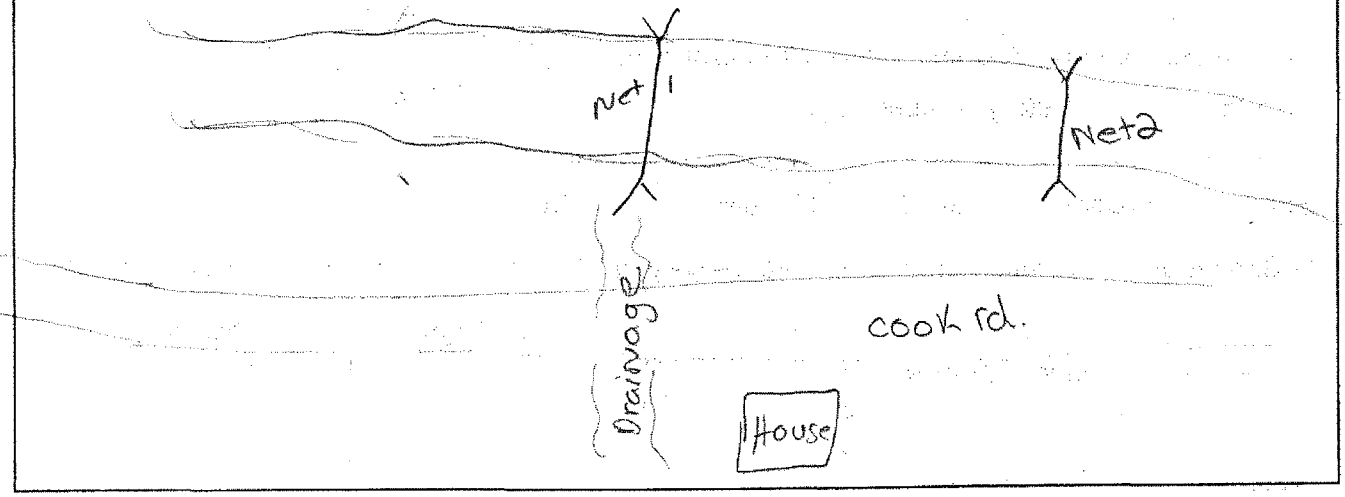
NET SITE HABITAT DESCRIPTION (Continued)

State: OH County: Scioto Project Name and #: ODOT CH2Mhill/ Pesi 096.04

Site Name/#: 13 Waypoint Name: ODOT 16

SKETCH: SET 1 & 2



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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 29 July 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 52' 363" Longitude: W 82° 54' 434"
Site Name/#: 14 **Waypoint Name:** ODOT 15
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** _____
Distance to water:

ESTIMATED STREAM CHARACTERISTICS

Bank Height: _____ Channel Width: _____ Stream Width: _____
Substratum: Sand Gravel Cobble Bedrock Silt/mud other _____
Average Water Depth: _____ Clarity: High Moderate Low

VEGETATION

Estimated Canopy Closure: Closed (Moderate) Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 16dbh Sm 12dbh
1. Acer saccharum
2. Acer rubrum
3. _____
Roost Tree Potential consists of: (Large Trees) Snags Both
Roost Tree Potential for the Area is: High (Moderate) Low
Subdominant Overstory Species (<38cm/15"):
1. _____ 2. _____ 3. _____
Relative Abundance of Dominant vs. Subdominant: 50/50
Description of Overstory Habitat Form:

Subcanopy Clutter: Closed (Moderate) Open
Is Subcanopy Vegetation Lay Comprised Largely of: Lower Branches of Canopy Trees?
(Saplings) Shrubs
Dominant Understory Species: 1. A. saccharum
2. A. rubrum
3.
Description of Habitat Form:

Herbaceous Cover: Christmas fern, stinging nettle, (very Sparse vegetation)

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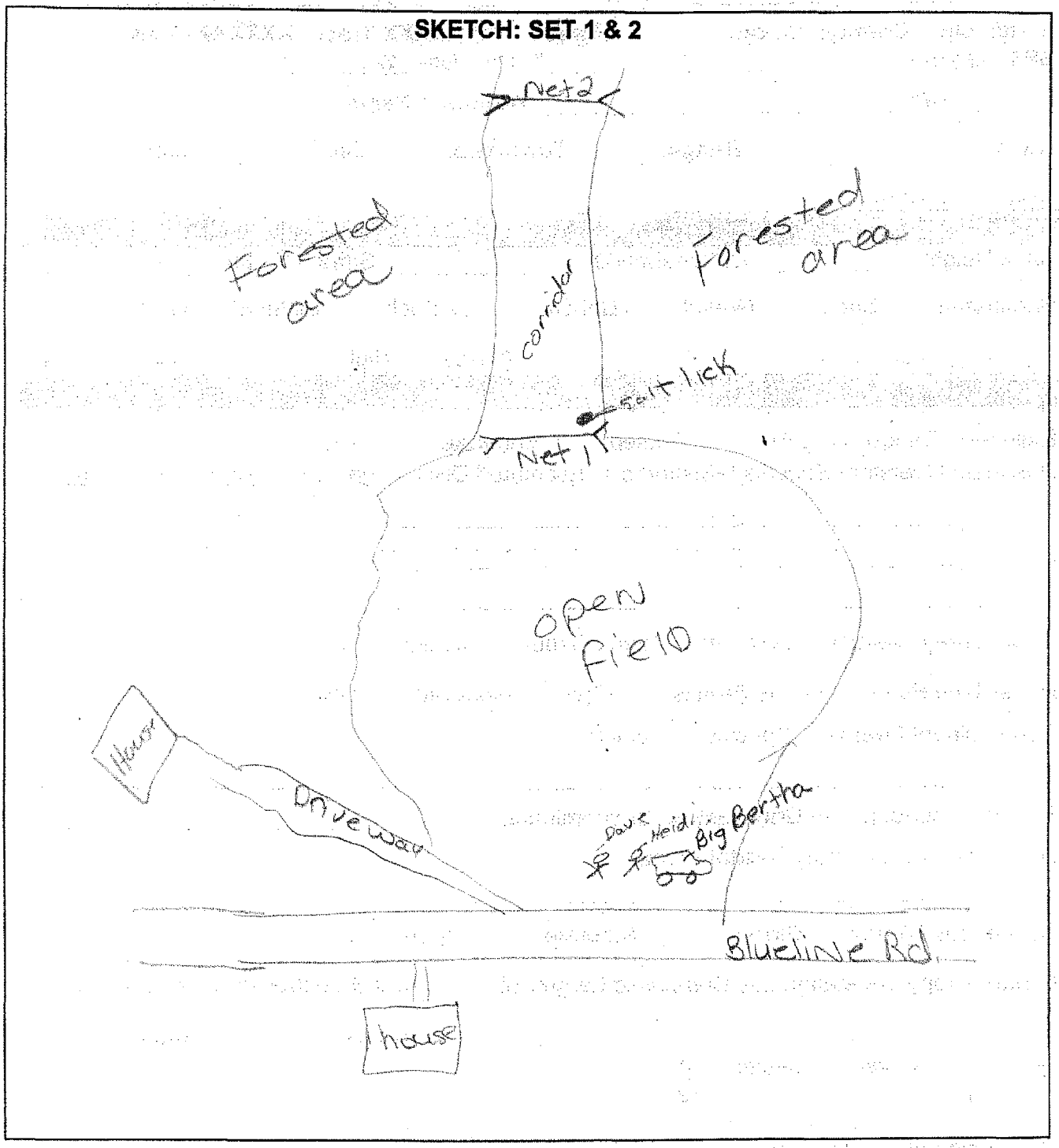
NET SITE HABITAT DESCRIPTION (Continued)

State: OH **County:** Scioto **Project Name and #:** ODOT CH2Mhill/ Pesi 096

Site Name/#: 14 **Waypoint Name:** ODOT 15

SKETCH: SET 1 & 2



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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 04 August 2003 **Biologist:** H. LaMountain, D. Jeffott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38° 50' 048" Longitude: W 82° 52' 574"
Site Name/#: 15 **Waypoint Name:** ODOT 18
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** _____
Distance to water:

ESTIMATED STREAM CHARACTERISTICS

Bank Height: 1m Channel Width: 15Ft Stream Width: 15Ft
Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☑ Bedrock ☐ Silt/mud other _____
Average Water Depth: 1m Clarity: ☐ High ☒ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate ☐ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 15dbh Sm 10dbh
1. Acer saccharum
2. Plantanus occidentalis
3. _____
Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both
Roost Tree Potential for the Area is: ☐ High ☒ Moderate ☐ Low
Subdominant Overstory Species (<38cm/15"):
1. A. saccharum 2. P. occidentalis 3. _____
Relative Abundance of Dominant vs. Subdominant: 50/50
Description of Overstory Habitat Form:

Subcanopy Clutter: ☐ Closed ☒ Moderate ☐ Open
Is Subcanopy Vegetation Lay Comprised Largely of: ☒ Lower Branches of Canopy Trees?
☐ Saplings ☐ Shrubs
Dominant Understory Species: 1. A. saccharum
2.
3.
Description of Habitat Form:

Herbaceous Cover: Poison Ivy, Clearweed, Polygonum sp., Stinging nettle
Jewelweed, Multifloralrose.

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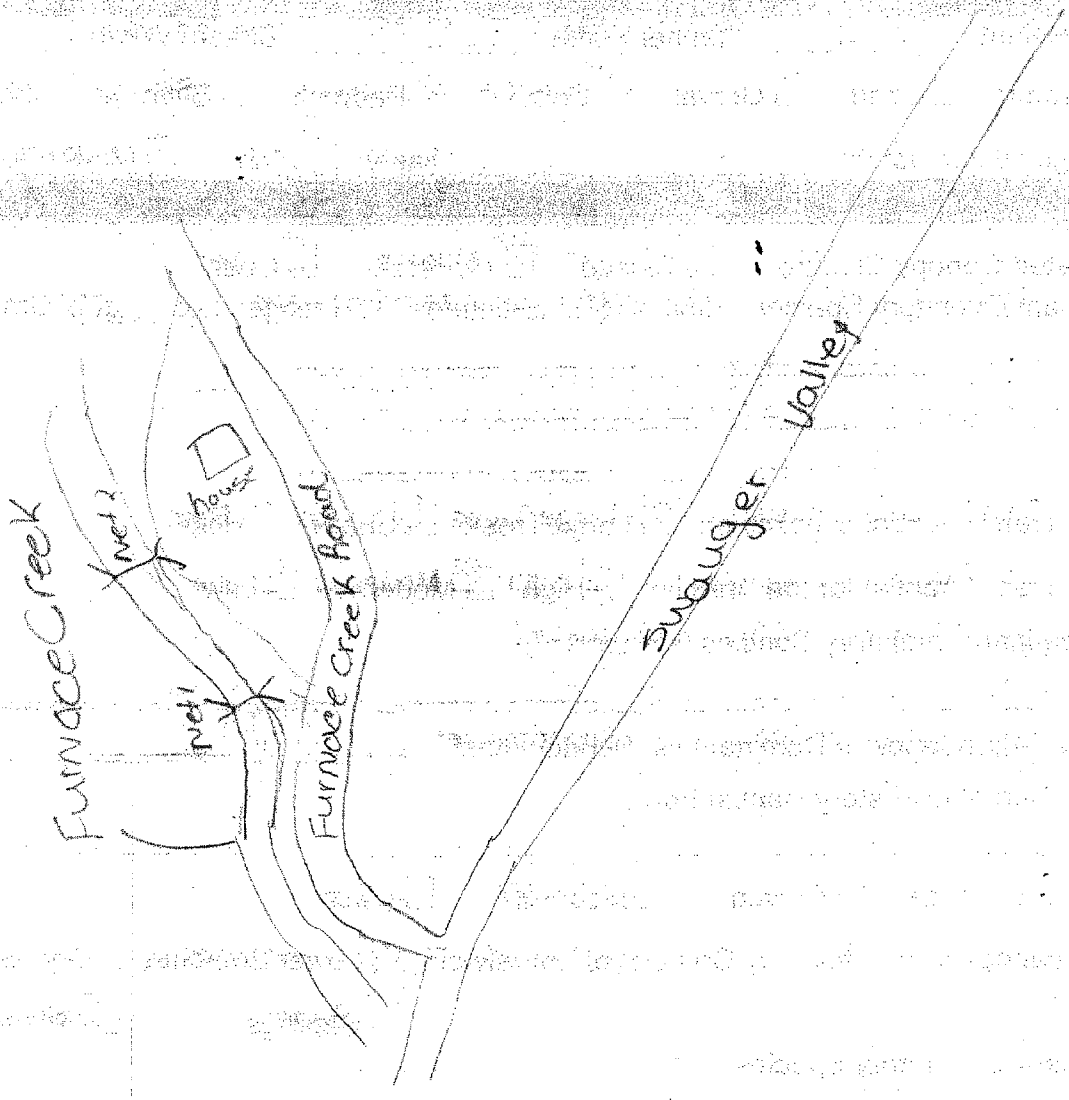
NET SITE HABITAT DESCRIPTION (Continued)

State: OH County: Scioto Project Name and #: ODOT CH2Mhill/ Pesi 096

Site Name/#: 15 Waypoint Name: _____

SKETCH: SET 1 & 2



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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 31 July 2003 **Biologist:** J. Schwierjohann / J. Duffey

State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 49' 41.2" Longitude: W 82° 50' 57.6"

Site Name/#: ~~ST~~ 16 **Waypoint Name:** 007 / GPS#10

Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** ____

Distance to water: In stream / Intermittent

ESTIMATED STREAM CHARACTERISTICS

Bank Height: 48" Channel Width: 15' Stream Width: 2'

Substratum: ☐ Sand ☒ Gravel ☒ Cobble ☐ Bedrock ☐ Silt/mud other _____

Average Water Depth: 2" Clarity: ☒ High ☐ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate → ☒ Open

Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 16" dbh Sm: 20" dbh

1. Platanus occidentalis
2. Juglans nigra
3. Acer negundo

Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both

Roost Tree Potential for the Area is: ☐ High ☐ Moderate ☒ Low

Subdominant Overstory Species (<38cm/15"):

1. Acer negundo 2. Juglans nigra 3. Acer saccharinum

Relative Abundance of Dominant vs. Subdominant: 1:1

Description of Overstory Habitat Form:
Thin riparian, Few large trees, Canopy 75% closed over corridor,

Subcanopy Clutter: ☐ Closed ☒ Moderate → ☒ Open open outside corridor

Is Subcanopy Vegetation Lay Comprised Largely of: ☒ Lower Branches of Canopy Trees?
☐ Saplings ☐ Shrubs

Dominant Understory Species:
1. Lindera benzoin
2. Ulmus americana
3.

Description of Habitat Form:
Intermittent stream w/thin riparian in agricultural land

Herbaceous Cover: Phlox maculata, Urtica dioica, Impatiens pallida

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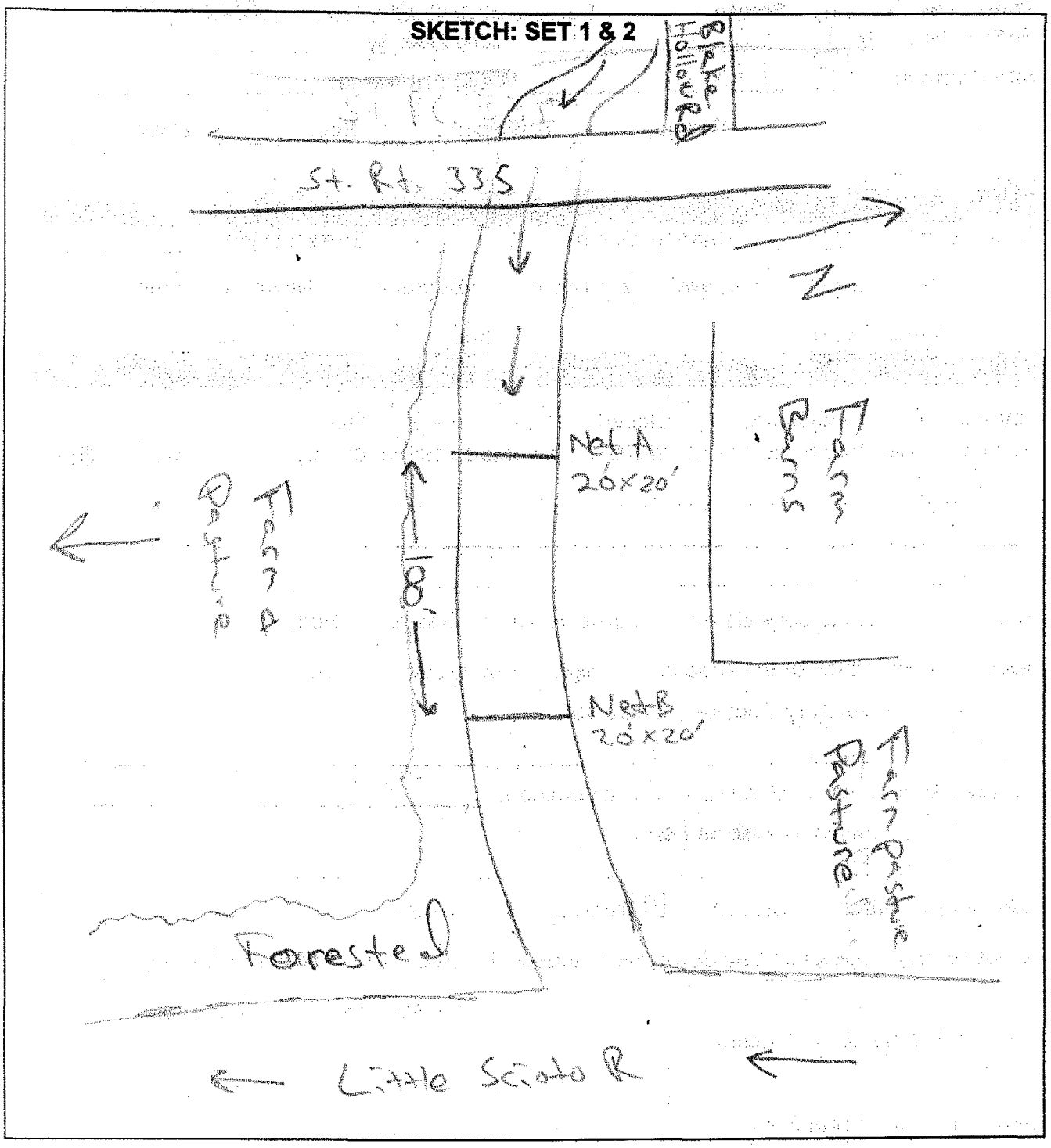
NET SITE HABITAT DESCRIPTION (Continued)

State: OH County: Scioto Project Name and #: ODOT CH2Mhill/ Pesi 096.04

Site Name/#: 2A-16 Waypoint Name: _____

SKETCH: SET 1 & 2



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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 29 July 2003 **Biologist:** J. Schwierjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 48' 25.9" Longitude: W 82° 50' 48.5"
Site Name/#: ~~TA~~ 17 **Waypoint Name:** 006 GPS #10
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** ____
Distance to water: 300' culverted under site

ESTIMATED STREAM CHARACTERISTICS

Bank Height: _____ Channel Width: _____ Stream Width: _____
Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☐ Bedrock ☐ Silt/mud other _____
Average Water Depth: _____ Clarity: ☐ High ☐ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate → ☒ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 28" dbh Sm 16" dbh
1. Platanus occidentalis
2. Liriodendron tulipifera
3. Quercus rubra, Carya ovata (8" DBH)
Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both
Roost Tree Potential for the Area is: ☐ High ☐ Moderate ☒ Low
Subdominant Overstory Species (<38cm/15"):
1. Ulmus americana 2. Juglans nigra 3. Gleditsia triacanthos
Relative Abundance of Dominant vs. Subdominant: 1:3
Description of Overstory Habitat Form:
Older dominant trees on E corridor. W is development/pasture
Subcanopy Clutter: ☐ Closed ☒ Moderate E. corridor ☒ Open W. Corridor
Is Subcanopy Vegetation Lay Comprised Largely of: ☐ Lower Branches of Canopy Trees? ☒ Saplings ☐ Shrubs
Dominant Understory Species: 1. Acer rubra 2. Lindera benzoin 3.
Description of Habitat Form:
Dry road corridor between residential + pasture near RR
Herbaceous Cover: Urtica dioica, Impatiens pallida, Rhus radicans, Hemerocallis fulva, Parthenocissus quinquefolia

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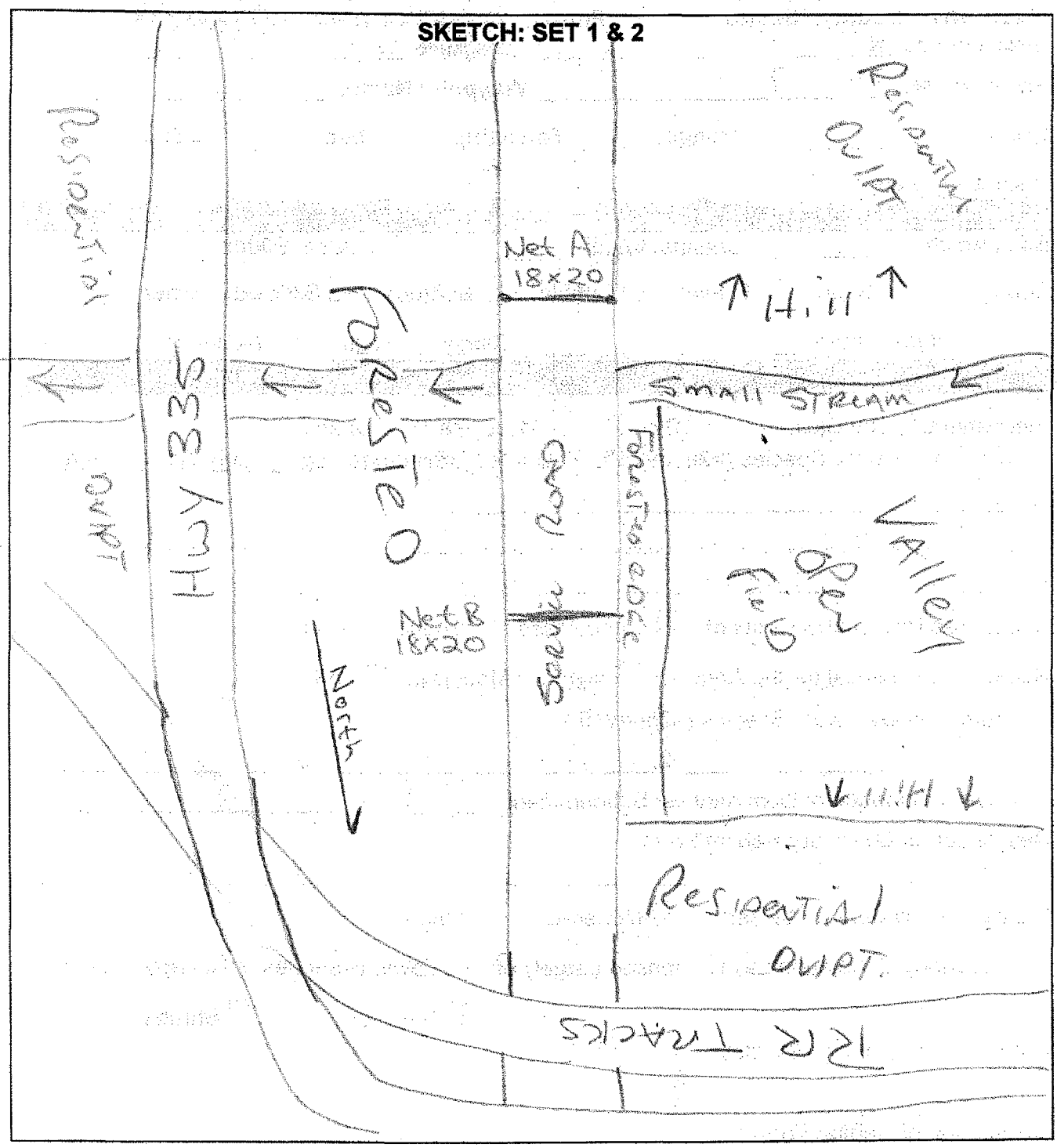
NET SITE HABITAT DESCRIPTION (Continued)

State: OH **County:** Scioto **Project Name and #:** ODOT CH2Mhill/ Pesi 096.04

Site Name/#: ~~TA~~ 17 **Waypoint Name:** _____

SKETCH: SET 1 & 2



COMMENTS

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ESI

NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 3 Aug 2003 **Biologist:** J. Schwierjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 47' 31.2" Longitude: W 82° 51' 25.0"
Site Name/#: ~~SH 18~~ **Waypoint Name:** 008/GPS#10
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** ____
Distance to water: 150'

ESTIMATED STREAM CHARACTERISTICS

Bank Height: _____ Channel Width: _____ Stream Width: _____
Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☐ Bedrock ☐ Silt/mud other _____
Average Water Depth: _____ Clarity: ☐ High ☐ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate → ☒ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: ~~20~~ 18" dbh Sm 15" dbh
1. Quercus alba
2. Quercus montana (Prinus)
3. Fraxinus americana

Roost Tree Potential consists of: ☐ Large Trees ☐ Snags ☒ Both
Roost Tree Potential for the Area is: ☐ High ☒ Moderate ☐ Low
Subdominant Overstory Species (<38cm/15"):
1. Acer rubra 2. Juglans nigra 3. Quercus alba
Relative Abundance of Dominant vs. Subdominant: 1:5
Description of Overstory Habitat Form:
Moderate 2° successional closed corridor adj. to pasture
Subcanopy Clutter: ☐ Closed ☒ Moderate ☐ Open light ice damage creating snags
Is Subcanopy Vegetation Lay Comprised Largely of: ☐ Lower Branches of Canopy Trees?
☒ Saplings ☐ Shrubs
Dominant Understory Species: 1. Nyssa sylvatica
2. Sassafras albidum
3. Fagus grandifolia
Description of Habitat Form:
Upland hardwood edge, uniformaged,
Herbaceous Cover: Smilax spp., Rubus spp., Lonicera japonica Fescue

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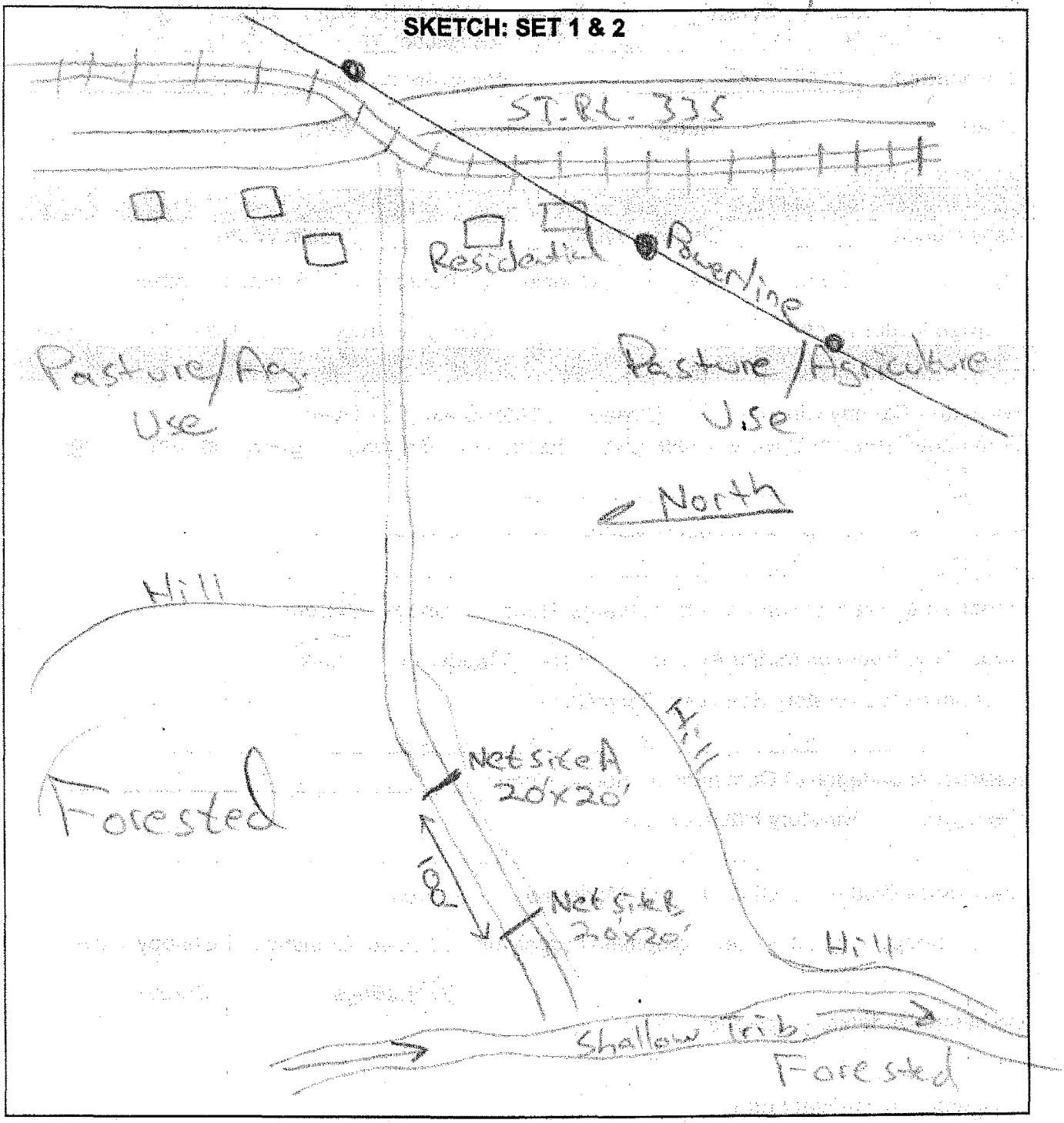
NET SITE HABITAT DESCRIPTION (Continued)

State: OH **County:** Scioto **Project Name and #:** ODOT CH2Mhill/ Pesi 096.04

Site Name/#: ~~SH~~ 18 **Waypoint Name:** 008/GPS #10

SKETCH: SET 1 & 2



COMMENTS

Bat capture corridor on edge of forested upland (>5 acres)

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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 6 Aug 2003 **Biologist:** J. Schwierjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXXXX
GPS: Latitude: N 38° 46' 03.4" Longitude: W 82° 52' 22.4"
Site Name/#: SA 19 **Waypoint Name:** 010 / GPS #10
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** _____
Distance to water: 1 mile.

ESTIMATED STREAM CHARACTERISTICS

Bank Height: _____ Channel Width: _____ Stream Width: _____
Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☐ Bedrock ☐ Silt/mud other _____
Average Water Depth: _____ Clarity: ☐ High ☐ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☐ Moderate ☒ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 16" dbh Sm 15" dbh
1. Robinia pseudoaccacia
2. ~~X~~ Few dominant trees
3. _____
Roost Tree Potential consists of: ☐ Large Trees ☐ Snags ☒ Both
Roost Tree Potential for the Area is: ☐ High ☐ Moderate ☒ Low
Subdominant Overstory Species (<38cm/15"): 4. Acer saccharum 5. Fraxinus americana
1. Liquidambar styraciflua 2. Juglans nigra 3. Robinia pseudoaccacia
Relative Abundance of Dominant vs. Subdominant: 1:50
Description of Overstory Habitat Form:
Uniform aged young trees, moderately closed corridors
Subcanopy Clutter: ☒ Closed ☐ Moderate ☐ Open
Is Subcanopy Vegetation Lay Comprised Largely of: ☐ Lower Branches of Canopy Trees? ☒ Saplings ☒ Shrubs
Dominant Understory Species: 1. Rinia pseudoaccacia
2. Rhus spp.
3. Platanus occidentalis
Description of Habitat Form:
2° successional, Recently heavily logged open area with corridors leading to forested area
Herbaceous Cover: Common ragweed, Common plantain, milkweed, Joe-pye weed, Rosa multiflora
Fescue

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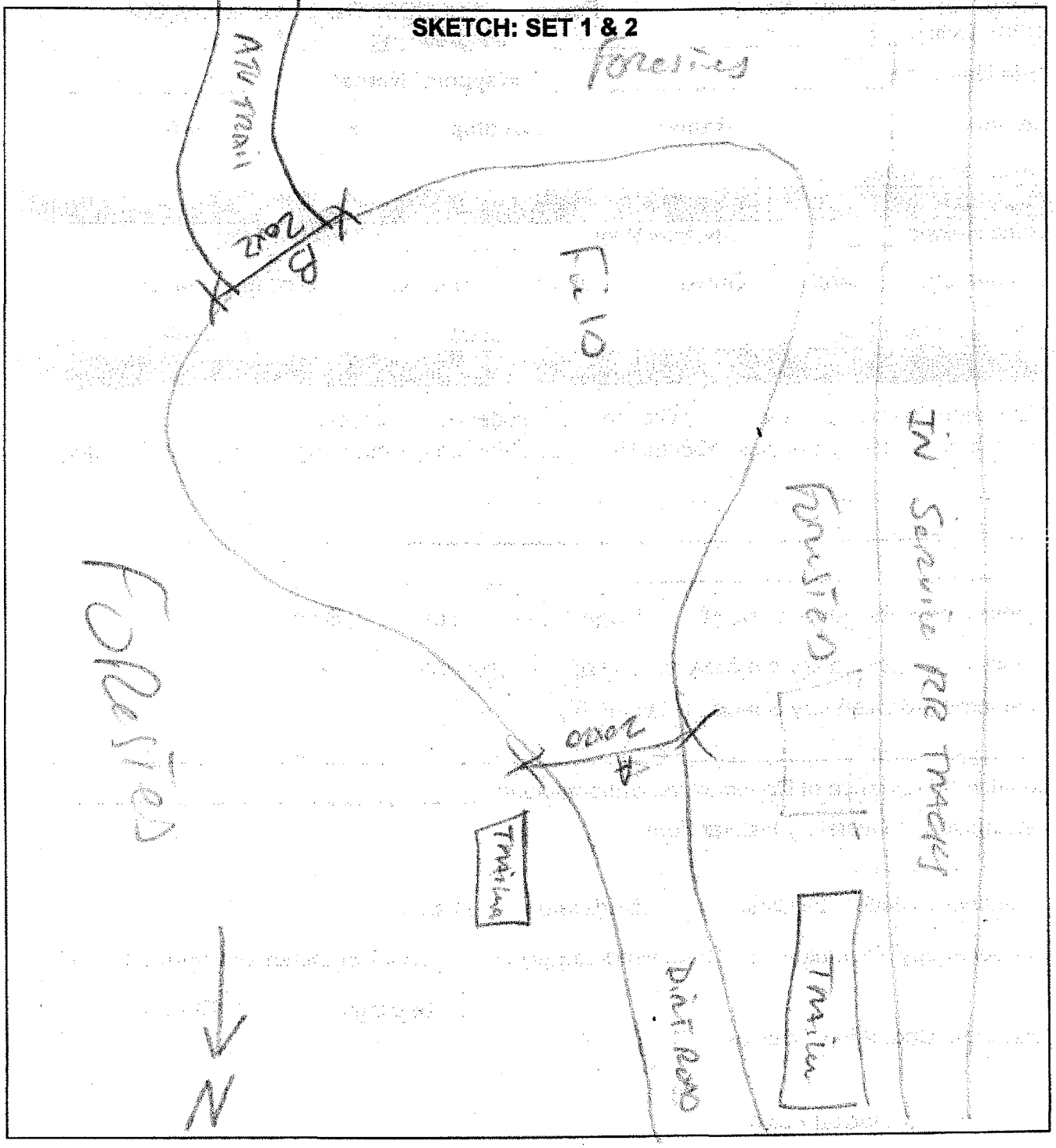
NET SITE HABITAT DESCRIPTION (Continued)

State: OH County: Scioto Project Name and #: ODOT CH2Mhill/ Pesi 096.04

Site Name/#: ~~SA~~ 19 Waypoint Name: 010 GPS #10

SKETCH: SET 1 & 2



COMMENTS

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NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 06 August 2003 **Biologist:** M. LaMountain, D. Jeffcott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38° 45' 123" Longitude: W 82° 50' 564"
Site Name/#: Shela Rd ~~#21~~ #20 **Waypoint Name:** ODOT 19
Quad.: _____ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** _____
Distance to water:

ESTIMATED STREAM CHARACTERISTICS

Bank Height: 0.5m Channel Width: 15ft Stream Width: 15ft
Substratum: ☐ Sand ☐ Gravel ☒ Cobble ☐ Bedrock ☐ Silt/mud other _____
Average Water Depth: 1 inch Clarity: ☒ High ☐ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate ☐ Open
Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 36" dbh Sm 8" dbh
1. Platanus occidentalis
2. Acer saccharum
3. _____
Roost Tree Potential consists of: ☐ Large Trees ☐ Snags ☒ Both
Roost Tree Potential for the Area is: ☐ High ☒ Moderate ☐ Low
Subdominant Overstory Species (<38cm/15"):
1. Fagus americana 2. _____ 3. _____
Relative Abundance of Dominant vs. Subdominant: 75% vs 25%
Description of Overstory Habitat Form:

Subcanopy Clutter: ☐ Closed ☐ Moderate ☑ Open
Is Subcanopy Vegetation Lay Comprised Largely of: ☑ Lower Branches of Canopy Trees?
☐ Saplings ☐ Shrubs
Dominant Understory Species: 1. Acer saccharum
2. Fagus americana
3.
Description of Habitat Form:

Herbaceous Cover: Jewelweed, Clearweed, Stinging nettle, Polygonum sp., Winged Monkey flower

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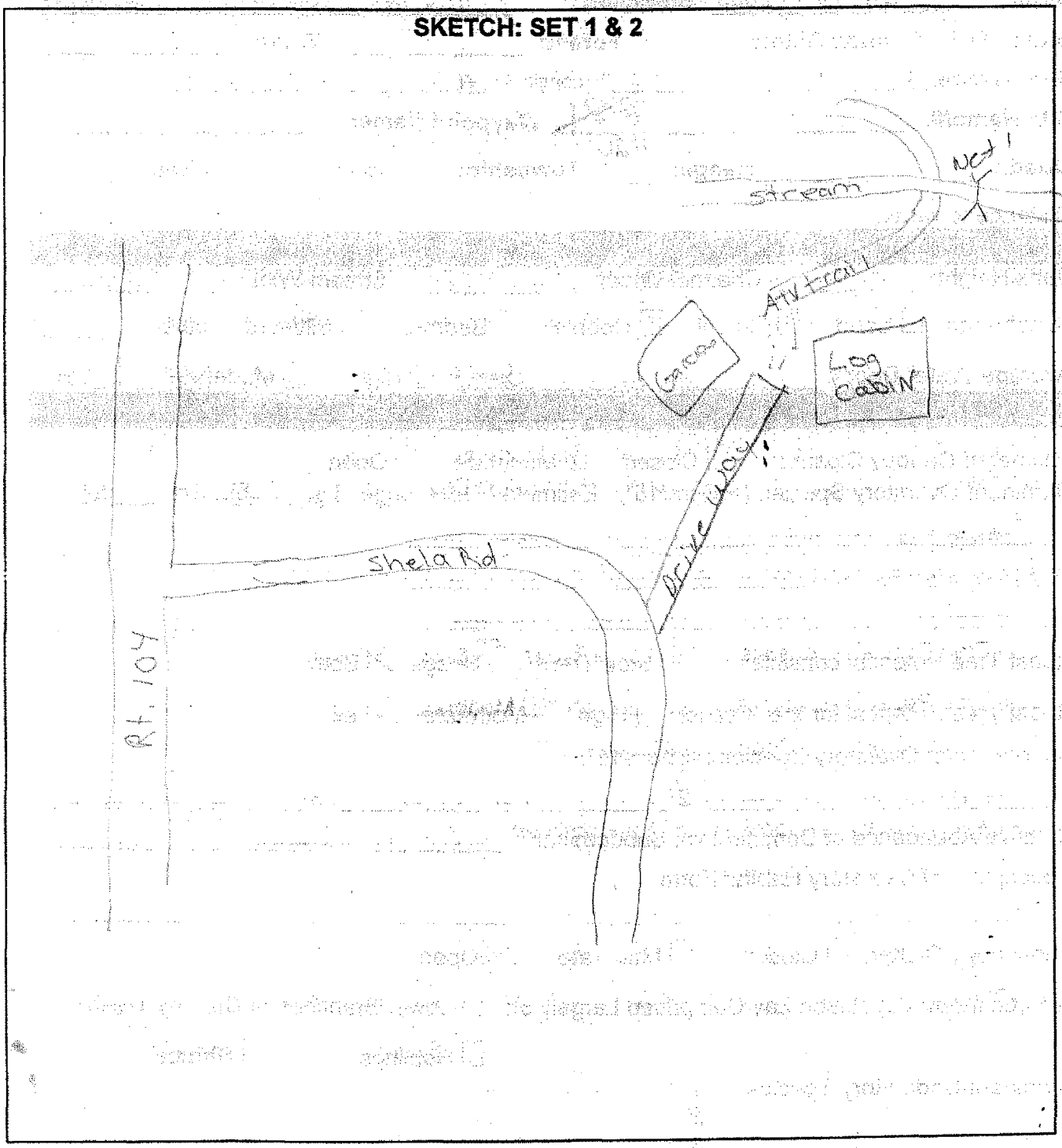
NET SITE HABITAT DESCRIPTION (Continued)

State: OH **County:** Scioto **Project Name and #:** ODOT CH2Mhill/ Pesi 096

Site Name/#: Shela Rd #21 **Waypoint Name:** ODOT 19

SKETCH: SET 1 & 2



COMMENTS

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ESI

NET SITE HABITAT DESCRIPTION

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 4 AUG 2003 **Biologist:** Schwierjohann; Duffey
State: OH **County:** Scioto **Forest:** XXXXXXXX **Tract:** XXXXXXXXXX
GPS: Latitude: N 38° 45' 32.3" Longitude: W 82° 52' 49.9"
Site Name/#: ~~4A 22~~ #21 **Waypoint Name:** 009 GPS #10

Quad.: ______ **Range:** ____ **Township:** ____ **Sec.:** ____ **¼ Sec.:** ____

Distance to water: 500 yds S

ESTIMATED STREAM CHARACTERISTICS

Bank Height: ______ Channel Width: ______ Stream Width: ______

Substratum: ☐ Sand ☐ Gravel ☐ Cobble ☐ Bedrock ☐ Silt/mud other ______

Average Water Depth: ______ Clarity: ☐ High ☐ Moderate ☐ Low

VEGETATION

Estimated Canopy Closure: ☐ Closed ☒ Moderate ☐ Open

Dominant Overstory Species (>38cm/15"): Estimated DBH range: Lg: 30 cm dbh Sm 15 cm dbh

1. Ulmus americana
2. Juglans nigra
3. Quercus rubra

Roost Tree Potential consists of: ☒ Large Trees ☐ Snags ☐ Both

Roost Tree Potential for the Area is: ☐ High ☐ Moderate ☒ Low

Subdominant Overstory Species (<38cm/15"):

1. Acer Rubrum 2. Ulmus Americana 3. Robinia Pseudoacacia

Relative Abundance of Dominant vs. Subdominant: 1:4

Description of Overstory Habitat Form:

Uneven, somewhat cluttered, no real gaps

Subcanopy Clutter: ☐ Closed ☒ Moderate ☐ Open

Is Subcanopy Vegetation Lay Comprised Largely of: ☒ Lower Branches of Canopy Trees?

☒ Saplings ☒ Shrubs

Dominant Understory Species:
1. Lindera Benzoin
2. Acer Rubrum
3. Ulmus Americana

Description of Habitat Form:

Herbaceous Cover:

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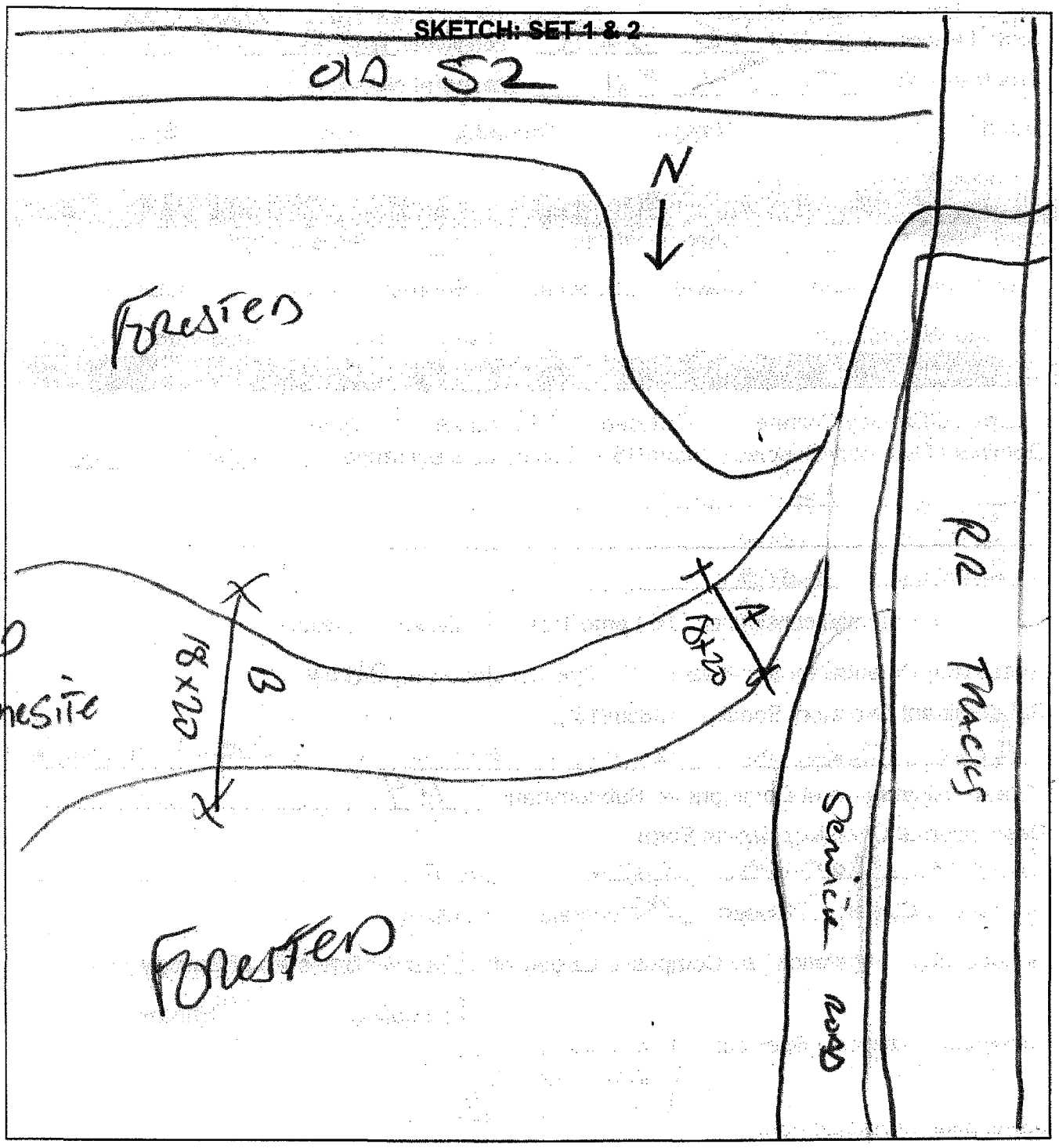
NET SITE HABITAT DESCRIPTION (Continued)

State: OH County: Scioto Project Name and #: ODOT CH2Mhill/ Pesi 096.04

Site Name/#: ~~4A 20~~ Waypoint Name: 009 / GPS #10

SKETCH: SET 1 & 2



COMMENTS

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 26 July 2003 **Biologists:** H. Lamountain, D. Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 11

GPS: Latitude: N 28 · 53 · 441 " Longitude: W 82 · 58 · 272 " **Waypoint Name:** ODOT14

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / (Old Nylon) / New Nylon	18'	20'	21:00	02:00
	2	Mono / (Old Nylon) / New Nylon	30'	30'	21:00	02:00
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Eptesicus fuscus	0130	Ad	F	PL	20.0	42.2	M	2	2 Meters
2	E. fuscus (escaped)	0130								2 M
3	E. fuscus	0230	Ad	F	PL	21.5	41.8	F	2	4 M

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 27 July 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 11

GPS: Latitude: N 38° 53' 441" Longitude: W 82° 58' 272" **Waypoint Name:** ODOT14

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / Old Nylon / New Nylon	18'	20'	21:30	02:30
	2	Mono / Old Nylon / New Nylon	30'	30'	21:30	02:30
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
	NO Captures									

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WEATHER DATA SHEET

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 26 July 2003 **Biologist:** H. LaMountain, D. Jeffcott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38°53'441" Longitude: W 82°58'272"
Site Name/#: 11 **Waypoint Name:** ODOT14
Comments:

Moon Phase (Quarter)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
18:00	80°F	0	—	20%	
19:45	72°F	0	—	20%	
20:45	71°F	0	—	20%	
21:45	71°F	0	—	0.0%	
22:45	70°F	0	—	0%	
24:00	70°F	0	—	0%	
01:15	68°F	0	—	0%	
03:05	67°F	0	—	0%	

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WEATHER DATA SHEET

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 27 July 2003 **Biologist:** M. LaMountain, D. Jeffcoat
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38 ° 53 ' 441 " Longitude: W 82 ° 58 ' 272 "
Site Name/#: 11 **Waypoint Name:** ODOT14

Comments:

Moon Phase (Quarter):

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
21:30	84°F	—	—	100%	Light rain for about 5 minutes
22:30	74°F	—	—	60%	
23:30	73°F	—	—	60%	
24:30	72°F	—	—	60%	
01:30	72°F	—	—	60%	
02:30	72°F	—	—	60%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 01 August 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 12

GPS: Latitude: N 38° 52' 440" Longitude: W 82° 58' 250" **Waypoint Name:** ODOT 17

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	21:00	02:00
	2	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	21:00	02:00
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Pipistrellus subflavus	22:30	Ad	F	L	7.6	33.3	F	1	3.0m

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 02 August 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 12

GPS: Latitude: N 38° 52' 440" Longitude: W 82° 58' 250" **Waypoint Name:** ODOT 17

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / Old Nylon / New Nylon	18'	20'	20:40	01:40
	2	Mono / Old Nylon / New Nylon	18'	20'	20:40	01:40
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL: M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Myotis lucifugus	23:30	Ad	F	NR	6.5	34.5	F	2	3.0 m
2	Lasiurus borealis	01:40	Ad	F	NR	15.5	40.3	F	1	1.0 m

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ESI

WEATHER DATA SHEET

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 01 August 2003 **Biologist:** LaMountain, Jeffcoll
State: OH **County:** Scioto **Forest:** ____ **Tract:** ____
GPS: Latitude: N 38° 52' 440" Longitude: W 82° 58' 250"
Site Name/#: 12 **Waypoint Name:** ODOT 17
Comments:

Moon Phase (Quarter)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From __ to __	% Cloud Cover (estimated)	Comments
21:00	78°F	0	—	20%	
22:00	76°F	0	—	20%	
22:30	70°F	0	—	20%	
23:00	70°F	0	—	20%	
24:00	70°F	0	—	20%	
01:00	68°F	0	—	20%	
02:00	68°F	0	—	20%	

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WEATHER DATA SHEET

Project No.: Pesi 096.01 **Project Name:** ODOT CH2MHill
Date: 02 August 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38° 52' 440" Longitude: W 82° 58' 250"
Site Name/#: 12 **Waypoint Name:** ODOT 17
Comments:

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
20:40	78°F	0	—	100%	
21:40	74°F	0	—	100%	
22:40	72°F	0	—	100%	
23:40	72°F	0	—	100%	light rain lasted for a few minutes - lightning - some thunder
24:40	72°F	0	—	100%	
01:40	72°F	0	—	100%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 30 July 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 13

GPS: Latitude: N 38° 52' 074" Longitude: W 82° 57' 336" **Waypoint Name:** ODOT16

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / ~~Old Nylon~~ / New Nylon	30'	20'	21:00	02:00
	2	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	21:00	02:00
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL: M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Lasiurus borealis	21:30	Jv	M	NR	6.0	37.6	E	2	2.5m
2	Myotis lucifugus	22:00	Ad	F	PL	9.0	38.8	M	1	3.5m
3	L. borealis	23:00	Jv	F	NR	10.0	40.95	M	1	3.5m
4	L. borealis	24:00	Ad	F	PL	14.0	43.6	M	1	1.5m
5	L. borealis	02:00	Jv	M	NR	12.0	40.95	M	1	0.5m

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 31 July 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 13

GPS: Latitude: N 38° 52' 074" Longitude: W 82° 57' 336" **Waypoint Name:** ODOT 16

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / ~~Old Nylon~~ / New Nylon	30'	20'	20:45	01:45
	2	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	20:45	01:45
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
	NO captures									

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WEATHER DATA SHEET

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 30 July 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38° 52' 074" Longitude: W 82° 57' 356"
Site Name/#: 13 **Waypoint Name:** ODOT16
Comments:

Moon Phase (Quarter)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
21:00	72°F	0	—	50%	
22:00	72°F	0	—	0%	
23:00	70°F	0	—	0%	
24:00	70°F	0	—	0%	
01:00	70°F	0	—	50%	
02:00	68°F	0	—	50%	

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WEATHER DATA SHEET

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill
Date: 31 July 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** _____ **Tract:** _____
GPS: Latitude: N 38° 52' 074" Longitude: W 82° 57' 336"
Site Name/#: 13 **Waypoint Name:** ODOT 16
Comments:

Moon Phase (circle one)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
20:45	76°F	0	—	90%	
21:30	76°F	0	—	80%	
22:30	74°F	0	—	80%	
23:30	70°F	0	—	80%	Has become Foggy in stream bed
24:30	70°F	0	—	80%	
01:30	70°F	0	—	80%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 28 July 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** 14

GPS: Latitude: N 38° 53' 363" **Longitude:** W 82° 54' 434" **Waypoint Name:** ODOT15

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / Old Nylon / New Nylon	18'	20'	21:00	0200
	2	Mono / Old Nylon / New Nylon	18'	20'	21:00	02:00
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Eptesicus fuscus	21:30	A	m	↑	21.0	46.75	E	1	3m
2	Eptesicus fuscus	21:30	A	m	↑	16.0	45.00	E	1	2m
3	E. fuscus	22:45	A	m	↑	16.5	48.10	m	1	2m
4	E. Fuscus	24:00	A	m	↑	16.0	48.2	m	1	3m

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 29 July 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 14

GPS: Latitude: N 38°52'363" Longitude: W 82°54'434" **Waypoint Name:** 090715

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / Old Nylon / New Nylon	18'	20'	20:45	01:45
	2	Mono / Old Nylon / New Nylon	18'	20'	20:45	01:45
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
		NO CAPTURES								

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WEATHER DATA SHEET

Project No.: Pesi 096,04 **Project Name:** ODOT CH2MHill
Date: 28 July 2003 **Biologist:** LaMountain, Jeffcott
State: OH **County:** Scioto **Forest:** X **Tract:**
GPS: Latitude: N 38° 52' 363" Longitude: W 82° 54' 434"
Site Name/#: 17 **Waypoint Name:** ODOT 15
Comments:

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
21:00	78°F	—	—	100%	
22:00	70°F	—	—	100%	
23:00	70°F	—	—	80%	
24:00	68°F	—	—	20%	
01:00	68°F	—	—	20%	
02:00	68°F	—	—	20%	

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WEATHER DATA SHEET

Project No.: Pesi 096.04 Project Name: ODOT CH2MHill
Date: 29 July 2003 Biologist: LaMountain, Jeffcott
State: OH County: Scioto Forest: _____ Tract: _____
GPS: Latitude: N 38° 52' 363" Longitude: W 82° 54' 434"
Site Name/#: 14 Waypoint Name: 0015

Comments:

Moon Phase (Quarter):

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From to	% Cloud Cover (estimated)	Comments
21:00	68°F	—	—	50%	
22:00	64°F	—	—	0%	
23:00	64°F	—	—	0%	
24:00	62°F	—	—	0%	
01:00	62°F			0%	
02:00	62°F	—	—	0%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 03 August 2003 **Biologists:** H. Lamountain, D. Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** 15

GPS: Latitude: N 38° 50' 048" Longitude: W 82° 52' 574" **Waypoint Name:** ODOT - 18

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / Old Nylon / New Nylon	30'	20'	21:00	02:00
	2	Mono / Old Nylon / New Nylon	30'	20'	21:00	02:00
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Eptesicus fuscus	21:30	Ad	F	PL	15.0	46.65	M	1	0.5 m
2	E. fuscus	21:30	Ad	F	NR	19.5	37.65	M	1	2.5m

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 04 August 2003 **Biologists:** LaMountain, Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** _____ **Tract:** _____ **Site Name/#:** 15

GPS: Latitude: N 38° 50' 048" Longitude: W 82° 52' 574" **Waypoint Name:** ODOT 18

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / Old Nylon / New Nylon	30'	20'	20:40	01:40
	2	Mono / Old Nylon / New Nylon	30'	20'	20:40	01:40
		Mono / Old Nylon / New Nylon				

Site Description/Comments: _____

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Feces #	Picture # & Description
1	Pipistrellus subflavus	22:00	JV	F	NR	5.0	32.7	M	/	1.5m - Net 2
2	Myotis lucifugus	22:00	Ad.	M	↑	8.5	37.00	M	/	3m - Net 2
3	Eptesicus fuscus	22:20	Ad	F	PL	20.5	47.65	F	/	3m - Net 1

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WEATHER DATA SHEET

Project No.: Pesi 096,04 **Project Name:** ODOT CH2MHill
Date: 03 August 2003 **Biologist:** H. McMountain, D. Tefft
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXX
GPS: Latitude: N 38° 50' 048" Longitude: W 82° 52' 57-4"
Site Name/#: 15 **Waypoint Name:** ODOT 18

Comments:

Moon Phase: Quarter

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From to	% Cloud Cover (estimated)	Comments
21:00	76°F	0	—	90%	
22:00	72°F	0	—	90%	
23:00	68°F	0	—	90%	
24:00	66°F	0	—	20%	
01:00	64°F	0	—	0%	
02:00	64°F	0	—	0%	

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WEATHER DATA SHEET

Project No.: Pesi 096.01 **Project Name:** ODOT CH2MHill
Date: 04 August 2003 **Biologist:** H. LaMountain, O. Jeffcoat
State: OH **County:** Scioto **Forest:** XXXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38 · 50 · 048" Longitude: W 82 · 52 · 574"
Site Name/#: 15 **Waypoint Name:** ODOT 18

Comments:

Moon Phase (Quarter)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
20:40	68°F	0	—	90%	
21:40	64°F	0	—	50%	
22:00	64°F	0	—	50%	
22:20	62°F	0	—	50%	
23:20	62°F	0	—	50%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 31 July 2003 **Biologists:** J. Schwierjohann/J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** 2ft 16

GPS: Latitude: N 38 · 49 · 41.2" Longitude: W 82 · 50 · 57.6" **Waypoint Name:** 007/GPS #10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	20'	20'	2045	0200
	B	Mono / Old Nylon / New Nylon	20'	20'	2045	0200
		Mono / Old Nylon / New Nylon				

Site Description/Comments: Rt. 335 across from Blake Hollow Rd. in stream

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net

NO BATS

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 1 Aug 2003 **Biologists:** J. Schwierjohann / J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** ~~2~~ 16

GPS: Latitude: N 38° 49' 41.2" Longitude: W 82° 50' 57.6" **Waypoint Name:** 007/GPS #10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	20'	20'	2030	0130
	B	Mono / Old Nylon / New Nylon	20'	20'	2039	0130
		Mono / Old Nylon / New Nylon				

Site Description/Comments: Rt. 335 across from Bleke Hollow Rd. in Stream
Screech owl 2230

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net

No BATS

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 31 July 2003 **Biologist:** J. Schwiegjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38° 49' 41.2" Longitude: W 82° 50' 57.6"
Site Name/#: ~~2A~~ 10 **Waypoint Name:** 007 / GPS #10

Comments: Scattered Thunderstorms in area today. Temperature variable. High 78 Low 71 According To Local weather channel.

Moon Phase (circle one)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2100		1-3	W → E	100%	Front moving through
2130		1-3	W → E	100%	
2200		1-3	W → E	80%	Clearing in W
2230		1-3	W → E	60%	" " "
2300		1-3	W → E	50%	" " "
2330		1-3	W → E	25%	Clouds in E
0000		1-3	W → E	50%	Clouds in NE
0030		1-3	W → E	80%	
0100		1-3	W → E	100%	
0130		"	"	80	
0200		"	"	80	

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 1 Aug 2003 **Biologist:** J. Schweiger Johann / J. DuFfey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXX
GPS: Latitude: N 38.49.41.2" Longitude: W 82.50.57.6"
Site Name/#: 24 10 **Waypoint Name:** 007/GPS#10
Comments: Hot, Humid all day. Front moving in tomorrow

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From to	% Cloud Cover (estimated)	Comments
2100	76°	1-3	W→E	75%	Moon visible
2130	76°	1-3	W→E	75%	
2200	75°	1-3	W→E	50%	
2230	75°	1-3	W→E	50%	
2300	75°	1-3	W→E	50%	moon below horizon
2330	74°	1-3	W→E	25%	
0000	74°	1-3	W→E	25%	
0030	72°	1-3	W→E	50%	Moderate Fog
0100	72°	1-3	W→E	50%	
0130	72°	1-3	W→E	50%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 29 July 2003 **Biologists:** J. Schwierjohann/J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** ~~1A~~ 17

GPS: Latitude: N 38 · 48 · 25.9 " Longitude: W 82 · 50 · 48.5 " **Waypoint Name:** 096/GPS#10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	18'	20'	2100	0200
	B	Mono / Old Nylon / New Nylon	18'	20'	2100	0200
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Eptesicus fuscus	2200	JV	M	↑	16	45.4	M	B	Top Center
2	Lasiurus borealis	0200	Escaped		→			→	B	Top Center

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 30 July 2003 **Biologists:** J. Schwierjohann / J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** ~~A~~ 17

GPS: Latitude: N 38 · 48 · 25.9" Longitude: W 82 · 50 · 48.5" **Waypoint Name:** 006 GPS#10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	18'	20'	2040	0140
	B	Mono / Old Nylon / New Nylon	18'	20'	2040	0140
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Lasiurus borealis	2130	Jv	M	↑	9.0	39.4	E	A	middle center
2	Eptesicus fuscus	0030	Ad	F	PL	20.5	48.7	F	B	Top Center

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 29 July 2003 **Biologist:** J. Schwierjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38°48'25.9" Longitude: W 82°50'48.5"
Site Name/#: ~~HA~~ 17 **Waypoint Name:** 006 / GPS #10
Comments: Thermometer unavailable. High 80 low 76 According to local weather channel

Moon Phase (Quarter) [illegible]

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2100		0	N/A	85%	High thin clouds
2130		0	N/A	85%	" " "
2200		1-3	W→E	85%	" " "
2230		1-3	W→E	40%	clearing in NE
2300		1-3	W→E	20%	clearing in NE
2330		1-3	W→E	15%	Patchy clouds in SE
0000		1-3	W→E	15%	" " " "
0030		1-3	W→E	10%	" " " "
0100		1-3	W→E	10%	" " " "
0130		1-3	W→E	10%	" " " "
0200		1-3	W→E	10%	" " " "

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 30 July 2003 **Biologist:** J. Schweiengohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXX
GPS: Latitude: N 38 · 48 · 25.9 " Longitude: W 82 · 50 · 48.5 "
Site Name/#: TA 17 **Waypoint Name:** 006 / GPS #10
Comments:

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From to	% Cloud Cover (estimated)	Comments
2100		0	N/A	0%	N/A
2130		0	N/A	0%	N/A
2200		0	N/A	0%	N/A
2230		0	N/A	0%	thin clouds in W
2300		0	N/A	15%	" " "
2330		0	N/A	15%	" " "
0000		0	N/A	15%	" " "
0030		0	N/A	15%	" " "
0100		0	N/A	25%	Cover moving W-E
0130		0	N/A	60%	Clouding quickly
0200		0	N/A	75%	" "

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 2 Aug 2003 **Biologists:** J. Schwierjohann/J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** ~~3A~~ 18

GPS: Latitude: N 38·47·31.2" Longitude: W 82·51·25.0" **Waypoint Name:** 008 GPS#10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / ~~New Nylon~~	20'	20'	2040	0230
	B	Mono / Old Nylon / ~~New Nylon~~	20'	20'	2040	0230
		Mono / Old Nylon / New Nylon				

Site Description/Comments: Upland Forested Corridor adjacent to pasture off St. Rt. 335 past RR tunnel. Nets closed 2345-0015

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
	NO BATS									

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 3 Aug 2003 **Biologists:** J. Schwierjohann/J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** ~~SR 18~~

GPS: Latitude: N 38° 42' 31.2" Longitude: W 82° 51' 25.0" **Waypoint Name:** 008/GPS#10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	20'	20'	2030	0130
	B	Mono / Old Nylon / New Nylon	20'	20'	2030	0130
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
	No Bats Captured									

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 2 Aug 2003 **Biologist:** J. Schwierjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXX
GPS: Latitude: N 38° 47' 31.2" Longitude: W 82° 51' 25.0"
Site Name/#: ~~3A 18~~ **Waypoint Name:** 008/GPS#10
Comments: Thunderstorms in AM. Cloudy all day. Front moving through tonight.

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2100	76°	1-3	NW → SE	100%	
2130	76°	1-3	NW → SE	100%	Moon Barely visible
2200	73°	1-3	NW → SE	95%	Clouds thin in NW
2230	73°	1-3	NW → SE	85%	
2300	74°	1-3	NW → SE	100%	Distant lightning
2330	75°	1-3	NW → SE	100%	Light Rain
0000	75°	Ø	N/A	100%	Rain stopped
0030	75°	Ø	N/A	100%	
0100	74°	Ø	N/A	100%	Distant lightning
0130	74°	Ø	N/A	100%	
0200	74°	1-3	W → E	100%	

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 3 Aug 2003 **Biologist:** J. Schweitzer/Johnson/J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38:47:31.2" Longitude: W 82:51:25.0"
Site Name/#: ~~3A 18~~ **Waypoint Name:** 008/GPS#18
Comments: Scattered Thunderstorms all day.

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2100	74°	1-3	W→E	75%	Fronts moving→
2130	74°	1-3	W→E	100%	
2200	76°	1-3	"	80%	Lightning far off in distance
2230	73°	1-3	NW→SE	100%	Distant lightning
2300	73	1-3	" "	100%	" "
0000	74	—	—	100	Front appears to have passed
0100	72°	1-3	NW→SE	80%	Clearing
0130	72°	1-3	W→E	50%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 6 Aug 2003 **Biologists:** J. Schwierjohann / J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** ~~SA~~ 19

GPS: Latitude: N 38° 46' 03.4" Longitude: W 82° 53' 22.4" **Waypoint Name:** 010/GPS#10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	20'	20'	2020	0130
	B	Mono / Old Nylon / New Nylon	20'	20'	2020	0130
		Mono / Old Nylon / New Nylon				

Site Description/Comments: Fitzgerald Property near opening by house

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Eptesicus fuscus	2150	Ad	M	↑	20	48.7	F	A	Top Right
2	Lasiurus borealis	2355	Ad	F	NR	11	39.2	M	A	Top Right

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 7 AUG 2003 **Biologists:** Schuette, Johnson, Lamountain **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXXX **Site Name/#:** ~~SA~~ 19

GPS: Latitude: N 38·46·03.4" Longitude: W 82·52·22.4" **Waypoint Name:** OLO GPS #10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / ~~New Nylon~~	18	20	2030	0130
	B	Mono / Old Nylon / ~~New Nylon~~	18	20	2030	0130
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	E. FUSCUS	2125	AD	F	PL	19.5	47.16	M	A	MIDDLE
2	P. SUBFLAVUS	2230	JV	M	↑	6	34.1	F	A	BOTTOM CATCH

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 6 Aug 2003 **Biologist:** J. Schwieterjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXX
GPS: Latitude: N 38° 46' 03.4" Longitude: W 82° 52' 23.4"
Site Name/#: SF 19 **Waypoint Name:** 010 GPS #10
Comments: Partly cloudy all day.

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2030	74°	Ø	N/A	10%	Moon visible
2100	72°	Ø	N/A	10%	
2130	72°	Ø	N/A	25%	
2200	70°	Ø	N/A	10%	
2230	71°	Ø	N/A	10%	
2300	71°	1-3	SW→NE	10%	
2330	70°	Ø	N/A	10%	
0000	70°	1-3	SW→NE	10%	Moon below horizon
0030	70°	1-3	SW→NE	50%	Clouding quickly
0100	70°	1-3	SW→NE	30%	
0130	70	1-3	SW-NE	40%	

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WEATHER DATA SHEET

Project No.: Pesi 096 Project Name: ODOT CH2MHill
Date: 7 AUG 2003 Biologist: Schwartzman, Lamonte
State: OH County: Scioto Forest: XXXXXXXX Tract: XXXXXXX
GPS: Latitude: N 38° 46' 03.4" Longitude: W 82° 52' 22.4"
Site Name/#: ST 19 Waypoint Name: 010 GPS #10
Comments: Rain All Day. Very Hazy Night

Moon Phase (Circle):

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2030	72	—	—	40%	
2100	71	—	—	50%	
2200	71	—	—	100%	Very Hazy, Humid
2300	71	1-3	W-E	100%	"
0000	70	—	—	100%	"
0100	70	—	—	100%	"
0130	70	—	—	100	"

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 4 Aug 2003 **Biologists:** J. Schwierjohann / J. Duffey **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** 4A 20

GPS: Latitude: N 38° 45' 32.3" Longitude: W 82° 52' 49.9" **Waypoint Name:** 009 / GPS #10

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
—	A	Mono / Old Nylon / New Nylon	20'	20'	2030	0130
—	B	Mono / Old Nylon / New Nylon	20'	20'	2030	0130
—	—	Mono / Old Nylon / New Nylon	—	—	—	—

Site Description/Comments: Forested corridor adj. to RR Tracks. ~~South~~ North side

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
1	Eptesicus fuscus	2130	Jv	M	↑	15.5	47.7	E	A	Top Center
	Glaucomys volans	2155	—	—	—	—	—	—	A	Top Left

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: S May 2003 **Biologists:** Schwierjohann / Hoffman **Camera #** 4

State: OH **County:** Scioto **Forest:** XXXXXXXXXX **Tract:** XXXXXXXX **Site Name/#:** 4K 20

GPS: Latitude: N 38° 45' 32.3" Longitude: W 82° 52' 49.9" **Waypoint Name:** 009 GPS 4K 20

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	A	Mono / Old Nylon / New Nylon	18	20	2030	0130
	B	Mono / Old Nylon / New Nylon	18	20	2030	0130
		Mono / Old Nylon / New Nylon				

Site Description/Comments:

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net #	Location in net
					NO BATS					

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WEATHER DATA SHEET

Project No.: Pesi 096.01 **Project Name:** ODOT CH2MHill
Date: 05 August 2003 **Biologist:** H. LaMountain, D. Jeffcott
State: OH **County:** Scioto **Forest:** XXXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38° 45' 123" Longitude: W 82° 50' 564"
Site Name/#: Shela Rd. ~~#21~~ #20 **Waypoint Name:** ODOT19
Comments:

Moon Phase (Quarter)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
20:40	68°F	0	—	50%	
21:40	66°F	0	—	50%	
22:40	64°F	0	—	0%	
23:40	64°F	0	—	0%	
24:40	64°F	0	—	0%	
01:40	64°F	0	—	0%	

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WEATHER DATA SHEET

Project No.: Pesi 096.01 **Project Name:** ODOT CH2MHill
Date: 06 August 2003 **Biologist:** H. LaMountain, D. Jeffcott
State: OH **County:** Scioto **Forest:** XXXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38° 45' 123" Longitude: W 82° 52' 564"
Site Name/#: Shela Rd. ~~#21~~ #20 **Waypoint Name:** ODOT 9
Comments:

Moon Phase (Quarter):

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
20:40	76°F	0	—	50%	
21:40	70°F	0	—	50%	
22:40	64°F	0	—	20%	
23:40	64°F	0	—	50%	
24:40	64°F	0	—	20%	
01:40	63°F	0	—	20%	

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: 05 August 2003 **Biologists:** H. LaMountain, P. Jeffcott **Camera #** NA

State: OH **County:** Scioto **Forest:** _____ **Tract:** _____ **Site Name/#:** Shela Rd. #21

GPS: Latitude: N 38° 45' 123" Longitude: W 82° 50' 564" **Waypoint Name:** ODOT 19

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	20:40	01:40
	2	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	20:40	01:40
		Mono / Old Nylon / New Nylon				

Site Description/Comments: _____

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Feces #	Picture # & Description
		NO		Captures						

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BAT CAPTURE DATA

Project No.: Pesi 096.04 **Project Name:** ODOT CH2MHill Page 1 of 1

Date: August 6, 2003 **Biologists:** H. LaMountain D Seffeath **Camera #** NA

State: OH **County:** Scioto **Forest:** _____ **Tract:** _____ **Site Name/#:** Shela Rd #21

GPS: Latitude: N 38 ° 45 ' 12 3 " **Longitude:** W 82 ° 50 ' 56 4 " **Waypoint Name:** ODOT 19

Trap #	Net #	Net type	Length	Height	Time Up	Time Down
	1	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	20:45	01:45
	2	Mono / ~~Old Nylon~~ / New Nylon	18'	20'	20:45	01:45
		Mono / Old Nylon / New Nylon				

Site Description/Comments: _____

Capt #	Species	Time (2400)	Age Ad or Jv	Sex M or F	Reprod F=(NR/PG/L /PL; M=↑/↓	Wt (g)	RFA (mm)	Belly: F, M, E	Net ~~Feces~~ #	Picture # & Description
1	Eptesicus fuscus	22:30	Ad	F	NR	19.5	46.55	F	2	

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: 4 Aug 2003 **Biologist:** J. Schwierjohann / J. Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38.45.32.3" Longitude: W 82.52.49.9"
Site Name/#: 4A 20 #21 **Waypoint Name:** 009/GPS #10
Comments: Thunderstorms all day. Evening showers predicted. Calm at beginning of bat survey. Rain ending at approx 2000 hrs. Day 7 moon (waxing)

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2100	68°	1-3	SW→NE	100%	Clouds thinning
2130	67°	0	N/A	100%	" "
2200	66°	—	—	90%	" "
2300	64	—	—	70%	
0000	64	—	—	30%	
0100	64	—	—	40%	
0130	63	—	—	50	

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WEATHER DATA SHEET

Project No.: Pesi 096 **Project Name:** ODOT CH2MHill
Date: SAug 2003 **Biologist:** Schweitzer ; Duffey
State: OH **County:** Scioto **Forest:** XXXXXXX **Tract:** XXXXXXX
GPS: Latitude: N 38.45.32.3" Longitude: W 82.52.49.9"
Site Name/#: ~~44 32~~ #21 **Waypoint Name:** 009 GPS #10
Comments:

Time (2400 h)	Temp (°C/F)	Wind Speed (estimated – see chart)	Wind Direction: From ___ to ___	% Cloud Cover (estimated)	Comments
2030	72	"	"	40	
2100	72	"	"	40	
2200	70	"	"	60	
2300	70	"	"	30	
0000	67	"	"	10	
0100	65	"	"	10	
0130	65	"	"	10	