

From: [Daniel Judy](#)
To: [Troy Andersen \(troy_andersen@fws.gov\)](#); [Sumalee Hoskin \(sumalee_hoskin@fws.gov\)](#)
Cc: [Neylon, Megan](#); [Taina Pankiewicz](#); [Valerie Clarkston](#); [Sparks, Sean](#)
Subject: MVP Mist Net Report Addendum
Date: Monday, June 13, 2016 4:31:17 PM
Attachments: [593 Mist-Net Report Addendum USFWS](#)

Good Afternoon –

Please find attached an addendum to the 2015 mist net report. These additional sites were surveyed on Jefferson National Forest lands to fulfill requirements related to the biological evaluation.

Please let us know if you have any questions.

Thanks,



Daniel J. Judy

Southeast Regional Manager

Environmental Solutions & Innovations, Inc.
2250 Lucien Way, Suite 302 | Maitland, FL 32751
office: 321.972.3958 | **direct:** 513.591.4339
fax: 321.972.3959 | **cell:** 407.269.7492
djudy@envsi.com | [www Envsi Com](http://www.Envsi.Com)



ENVIRONMENTAL SOLUTIONS & INNOVATIONS, INC.

4525 Este Avenue
Cincinnati, OH 45232
Phone: 513-451-1777 Fax: 513-451-3321

Pesi 593.12

13 June 2016

Mr. Troy Andersen and Ms. Sumalee Hoskin
U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

**RE: SUPPLEMENTAL MIST NET SURVEYS ON THE MVP PROPOSED ROUTE WITHIN
THE JEFFERSON NATIONAL FOREST, MONTGOMERY COUNTY, VIRGINIA**

Dear Mr. Andersen and Ms. Hoskin:

This letter serves as an addendum to the report submitted to your office on November 13, 2015 and entitled "Listed Bat Studies along MVP's Proposed Mountain Valley Pipeline Project in Craig, Franklin, Giles, Montgomery, Pittsylvania, and Roanoke counties, Virginia". A summary of the methods and survey results completed at three mist net sites within the Jefferson National Forest along the MVP proposed route in Montgomery County, Virginia (Attachment 1, Figure 1) is included.

ESI followed the United States Fish and Wildlife Service (USFWS) 2016 *Range-wide Indiana Bat Summer Survey Guidelines* (Attachment 2, Table 1). USFWS guidelines suggest that for linear projects in Virginia, a sampling effort of 1 site (6 net nights) should occur for every kilometer (0.6 mi) of potentially suitable summer habitat that is proposed for removal. As such, approximately 1.82 miles of the proposed route intersects suitable bat habitat within the Jefferson National Forest and thus sampling at three sites (18 net nights) was completed (Attachment 1, Figure 2).

From May 15 to May 26, 2016, six complete and six partial net nights resulted in the capture of nine big brown bats (*Eptesicus fuscus*), eight eastern red bats (*Lasiurus borealis*), and four silver-haired bats (*Lasionycteris noctivagans*) (Attachment 2, Table 2).

No state or federally listed bat species were captured. Habitat at mist net sites varied from lowland, riparian area to upland, forested ridgetops (Attachment 2, Table 3). Dominant canopy species included Virginia pine (*Pinus virginiana*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), chestnut oak (*Quercus montana*), and red maple (*Acer rubrum*). Overall, roost potential for Indiana (*Myotis sodalis*) and northern long-eared (*Myotis septentrionalis*) bats was considered moderate to high at the three sampled sites. A copy of completed mist net habitat assessment, weather, and bat capture data sheets are attached (Attachment 3). Photographs of each mist net location are also included in Attachment 3.

We respectfully request your review of the methods and results contained within this letter. If you have any questions or comments, please do not hesitate to contact Daniel Judy (DJudy@envsi.com; 513-591-4339), Valerie Clarkston (VClarkston@envsi.com; 513-591-4315), or Taina Pankiewicz (TPankiewicz@envsi.com; 513-591-4311).

Sincerely,



Valerie Clarkston
Scientist
VClarkston@envsi.com
513-591-4315

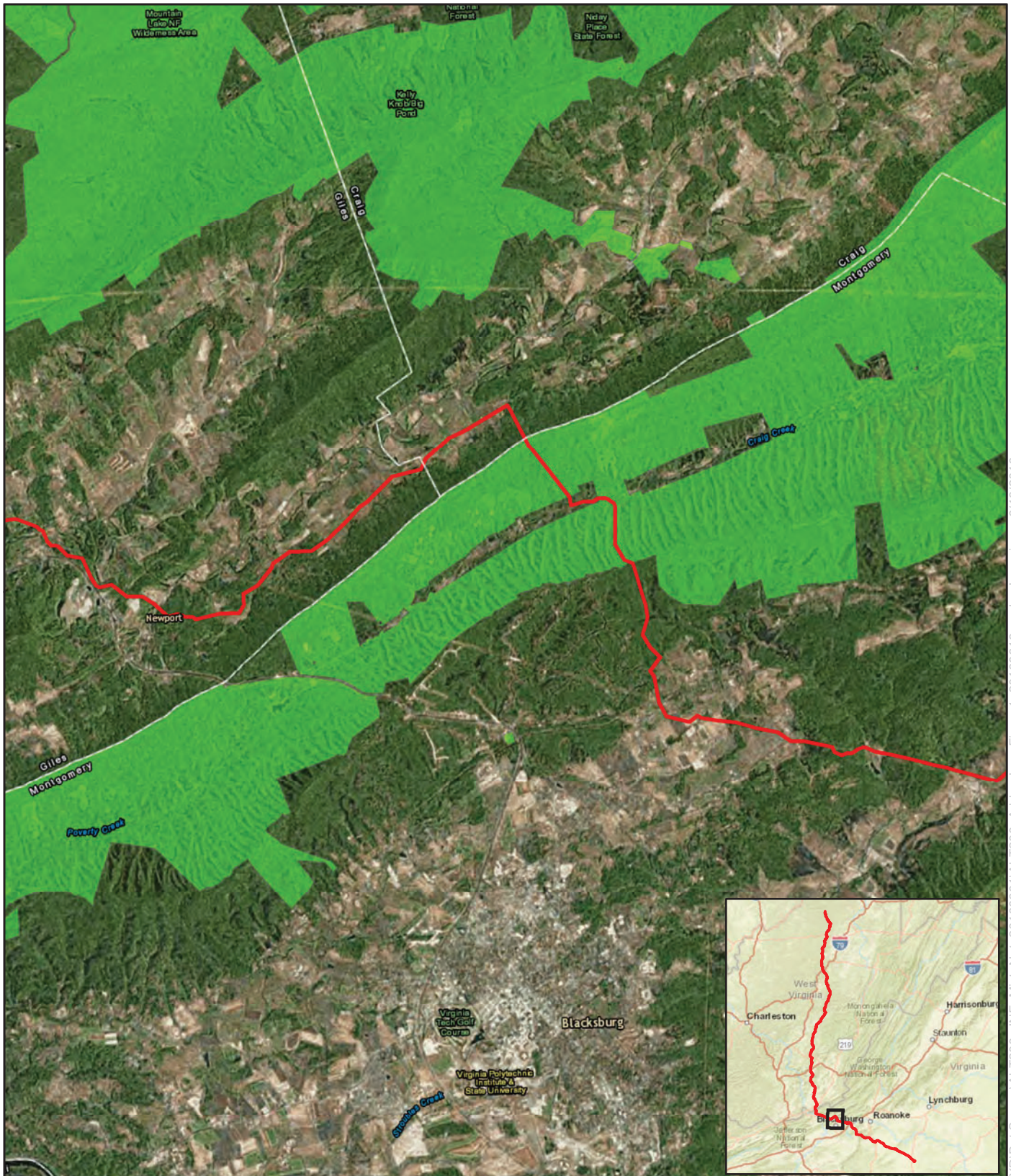
Attachments:

Attachment 1: Figures

Attachment 2: Tables

Attachment 3: Data Sheets and Photographs

**ATTACHMENT 1
FIGURES**



— Proposed Route National Forest Boundary

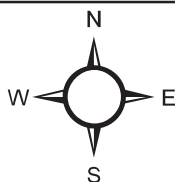


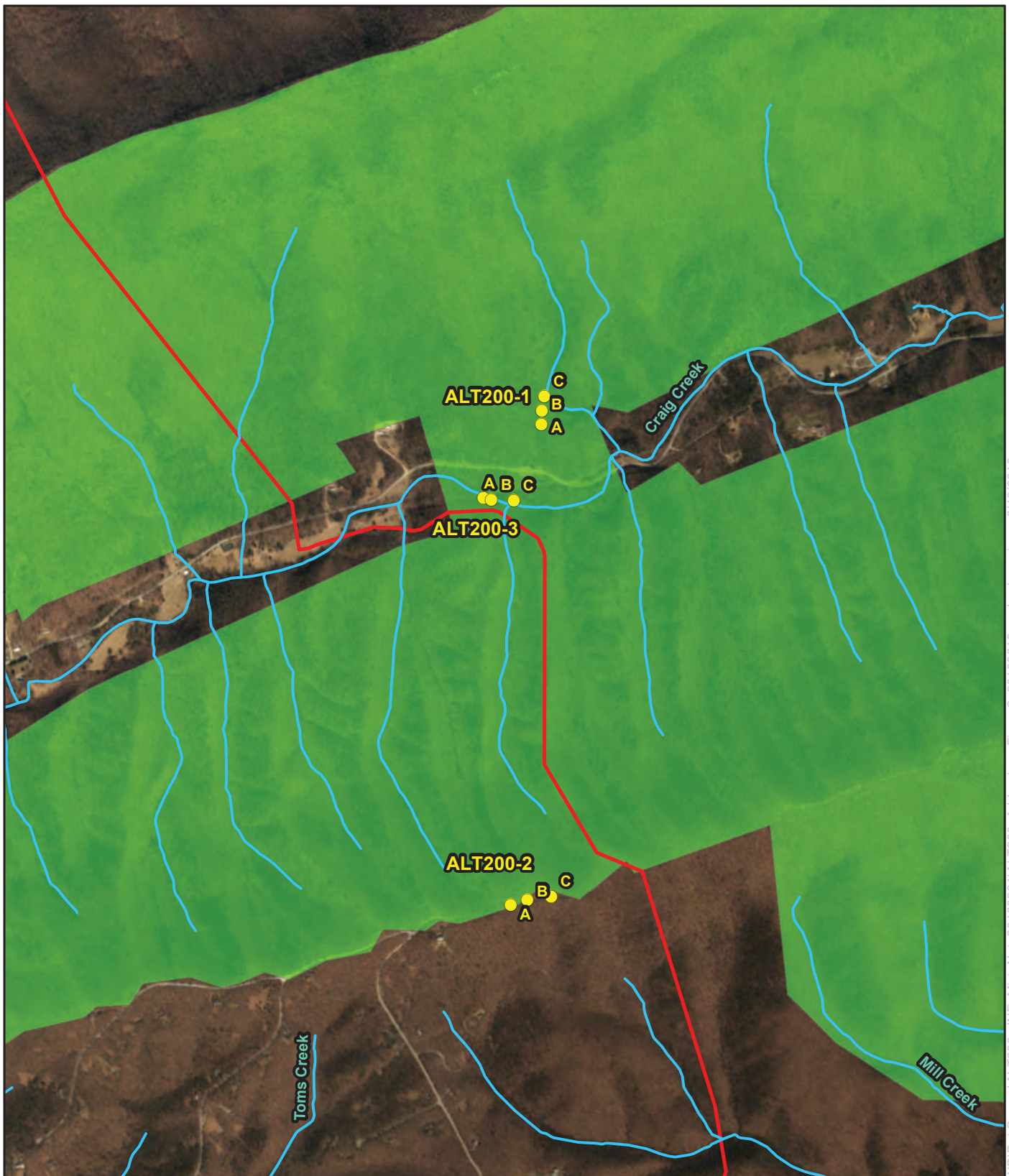
Figure 1. Location of MVP's proposed Mountain Valley Pipeline Project in relation to the Jefferson National Forest in Montgomery County, Virginia.

Project No.
593.12

0 1.25 2.5
Miles



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— Proposed Route
 National Forest Boundary
 — Stream
 ● Mist Net Location

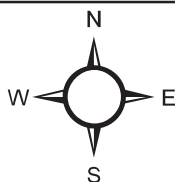


Figure 2. Mist net locations within the Jefferson National Forest, Montgomery County, Virginia.

Project No.
593.12

0 0.25 0.5
Miles



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**ATTACHMENT 2
TABLES**

Table 1. USFWS Indiana Bat Mist Net Survey Guidelines.

MIST NETTING GUIDELINES Northeast and Appalachian Recovery Units (CT, DE, MA, MD, NC, NJ, NY, PA, eastern TN, WV, VA, VT)	
1. Netting Season: Broadly 15 May to 15 August broadly.	
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 two (or more) nets “stacked” on top of one another; width may vary up to 60 feet (20 m).	
4. Net Site Spacing:	
♦ Linear Projects – minimum of 6 net nights per 0.6 mile (1 km); 1 net night = 1 net set deployed for 1 night	
♦ Non-linear Projects – minimum of 42 net nights per 123 acres (0.5 km)	
5. Minimum Level of Effort Per Net Site:	
♦ Maximum of 3 nights of consecutive netting at any given location; must change net locations or wait at least 2 calendar nights before resuming netting at same location	
♦ Sample Period: begin at dusk and net for 5 hours (approximately 0200h)	
♦ Nets are monitored at approximately 10-minute intervals	
♦ No disturbance near the nets between checks	
6. Weather: Negative surveys combined with any of the following conditions throughout all or most of a sampling period are likely to require an additional night of mist-netting:	
♦ Precipitation (rain and/or heavy fog) lasting >30 minutes or continuing intermittently during the survey period	
♦ Temperatures <10°C (50°F)	
♦ Sustained wind >9 mi/hr (4 m/sec) (3 on Beaufort scale)	
Source: U.S. Fish and Wildlife Service; 2016	

Table 2. Bat capture by sex, reproductive condition, and age along the Alternate 200 portion of MVP's Mountain Valley Pipeline Project.

Species	Adult	Adult Female ¹				Juvenile		Escape ²	Total
	Male	P	L	PL	NR	Male	Female		
Big brown bat	3	4	0	0	0	0	0	1	8
Silver-haired bat	4	0	0	0	0	0	0	0	4
Eastern red bat	8	1	0	0	0	0	0	0	9
Total	15	5	0	0	0	0	0	1	21

¹ P = Pregnant; L = Lactating; PL = Post lactating; NR = Non-reproductive

²Escape = escaped from net or hand before processing was complete

Table 3. Mist net habitat characteristics along the Alternate 200 portion of MVP's Mountain Valley Pipeline Project.

Site	Water Source		Tree species			Canopy Closure	Clutter		Roost Tree		Habitat Type	Herb. Cover
	Type	Distance (m)	Dominant Canopy	Subdominant Canopy	Subcanopy		Rating	Composition	Potential	Composition		
ALT200-1	Stream	200	<i>Pinus virginiana</i> , <i>Quercus alba</i> , <i>Quercus coccinea</i>	<i>Acer rubrum</i> , <i>Pinus virginiana</i> , <i>Liriodendron tulipifera</i>	<i>Carpinus caroliniana</i> , <i>Carya tomentosa</i> , <i>Juniperus virginiana</i>	Closed	Low	Saplings	Moderate	Large trees & snags	YL, FE	Sparse
ALT200-2	Stream	1300	<i>Quercus alba</i> , <i>Quercus montana</i> , <i>Acer rubrum</i>	<i>Acer rubrum</i> , <i>Quercus coccinea</i> , <i>Oxydendrum arboreum</i>	<i>Acer rubrum</i> , <i>Vaccinium</i> sp., <i>Rhododendron</i>	Moderate	Low	Saplings	Moderate	Snags	YU	Moderate
ALT200-3	Stream	0	<i>Quercus coccinea</i> , <i>Quercus alba</i> , <i>Pinus virginiana</i>	<i>Quercus coccinea</i> , <i>Quercus alba</i> , <i>Pinus virginiana</i>	<i>Acer rubrum</i> , <i>Nyssa sylvatica</i> , <i>Pinus virginiana</i>	Moderate	Low	Saplings	High	Large trees & snags	YL, FE, S/R	Dense

Tree Species: red maple (*Acer rubrum*), musclewood (*Carpinus caroliniana*), mockernut hickory (*Carya tomentosa*), eastern red cedar (*Juniperus virginiana*), tuliptree (*Liriodendron tulipifera*), blackgum (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), Virginia pine (*Pinus virginiana*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), chestnut oak (*Quercus montana*), rhododendron (*Rhododendron*), blueberry (*Vaccinium*)

Habitat Type: YU = Young Upland Forest; YL = Young Lowland Forest; FE = Forest Edge; S/R = Stream/River;

ATTACHMENT 3
DATA SHEETS AND PHOTOGRAPHS



2014

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HABITAT ASSESSMENT

Project #: 593-12Date: 15 May 2016State: VA County: MontgomeryProject Name: MUPSite Name/ #: A1+200-1

USGS Quad: _____

Permitted Biologist: Valerie Clarkston
(full name)Other Field Staff: Chris Kanoza
(full name)State Permit #: TE:056396 / SC:056397Federal Permit #: TF02373A-9

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Picture #	Waypoint #
<u>Net</u>	<u>A</u>	<u>37. ° 316635 "N</u>	<u>-80 ° 397310 "W</u>	<u>MA115,24842</u>	
<u>Net</u>	<u>B</u>	<u>37. ° 317038 "N</u>	<u>-80 ° 397290 "W</u>	<u>25204</u>	
<u>Net</u>	<u>C</u>	<u>37. ° 317469 "N</u>	<u>-80 ° 397189 "W</u>	<u>25334</u>	
		<u>° ' "N</u>	<u>° ' "W</u>		

Distance to closest water source (meters): 200 Type of water source: StreamWater source name: Craig Creek

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: _____ meters Channel Width: _____ meters Stream Width: _____ meters

Substratum: Bedrock Boulder Cobble Gravel Sand Silt/Clay

Still Water Present (Y/N): _____ Average Water Depth: _____ m or cm Clarity (H,M,L): _____

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Pinus virginiana
Quercus alba
Quercus coccinea

Subdominant Canopy Species (< 40 cm/16" dbh)

Acer rubrum
Pinus virginiana
Liriodendron tulipiferaEstimated dbh range: Lg: 10cm Sm: 40cmEstimated dbh range: Lg: 40cm Sm: 20cmRelative abundance of dominant vs. subdominant (ratio): 1:10Estimated canopy closure: X Closed _____ Moderate _____ OpenRoost tree potential consists of: X Large Trees X Snags _____ NeitherRoost tree potential for the area is: _____ High X Moderate _____ LowRoost potential comments: Numerous large snags + flight corridorsSubcanopy clutter: _____ Closed _____ Moderate X OpenSubcanopy comprised largely of: _____ Lower Branches of Canopy Trees X Saplings _____ Shrubs

Common Subcanopy Species:

Carpinus caroliniana
Juniperus virginianaCarya tomentosaHabitat Description: Lowland mixed forest split by logging roads, Craig Creek Road and
Craig Creek. Very open understory.

Check all that apply:

<u>_____</u> Mature Upland Forest	<u>_____</u> Recently Logged Forest	<u>_____</u> Crop/Pasture Land	<u>_____</u> Other _____
<u>_____</u> Young Upland Forest	<u>X</u> Forest Edge	<u>_____</u> Stream/River	<u>_____</u>
<u>_____</u> Mature Lowland Forest	<u>_____</u> Woodlot	<u>_____</u> Vernal Pool	<u>_____</u>
<u>X</u> Young Lowland Forest	<u>_____</u> Old Field	<u>_____</u> Deepwater Lake/Pond	<u>_____</u>

Herbaceous Cover: X Sparse _____ Moderate _____ Dense



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HABITAT ASSESSMENT (continued)

Project #: 593.12	State/County: VA / Montgomery	Site Name/#: AH200-1	Initials: VC
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SKETCH NETS and/or DETECTORS

LEGEND

Net: ● — ●

Detector: □

COMMENTS

Nets placed over USFS forest road



BAT CAPTURE DATA

2014

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WEATHER DATA

WEATHER DATA				
Time (xxxx h)	Temp (°C)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2015	52.0	1-3	100	
2045	51.4	1-3	100	
2115	49.5	1-3	100	

OLD DU

Project #: 593.12
Project Name: muf
State: VA
GPS Unit #: i Pad 283
Permitted Biologist: Valerie Clark (full name)
Date: 15 May 2016
Site Name/ #: A1+200-1
County: Montgomery
Camera #: i Pad 283
Other Field Staff: Chns Kanooza (full name)
State Permit #: TE:056394 SC: 050397
Federal Permit #: TE02373A-9

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude DD	Longitude DD	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37 ° 36'35	"N -80 ° 39'310	9	6	2015	2115	248 42	—
Net	B	37 ° 37'038	"N -80 ° 39'7290	9	9	2015	2115	252 04	—
Net	C	37 ° 37'469	"N -80 ° 39'7189	9	6	2015	2115	253 34	—
		"N	"W						

Net Placement/Site Description: Net over forested logging road

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



BAT CAPTURE DATA

2014

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4525 Este Avenue, Cincinnati, OH 45222 (Phone: 513-451-1777)

WEATHER DATA

WEATHER DATA				
Time (xxxx h)	Temp (°F)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2010	54.6	0	100	
2040	52.9	1-3	100	
2110	51.5	1-3	100	
2140	50.4	1-3	100	
2210	48.0	1-3	100	

Project #: 593.12
Project Name: MUP
State: VA
GPS Unit #: iPod 283
Permitted Biologist: Keno Clarkston
(full name)
Date: 16 May 2016
Site Name#: A11200-1
County: Montgomery
Camera #: iPod 283
Other Field Staff: Chris Kanoska
(full name)
Federal Permit #: TE02373A-9

Net/Trip/ Detector	Net/Trip/ Detector #	Latitude DD	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37 ° 31'6"35	"N 80 ° 39'7"30	9	6	2010	2215	MAY 15 2 48 42	—
Net	B	37 ° 31'0"38	"N 80 ° 39'7"20	9	9	2010	2215	2 52 04	—
Net	C	37 ° 31'4"69	"N 80 ° 39'7"89	9	6	2010	2215	2 53 34	—
		"N	"W						

Net Placement/ Site Description: Placed over fire坑 USFS road

[illegible]

* Refer to table on the back



BAT CAPTURE DATA

SC: 056397

WEATHER DATA				
Time (xxxx h)	Temp (°C)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2010	56.1	0-1	100	Overcast
2040	55.9	0-1	100	Overcast
2110	55.6	0-1	100	
2140	55.6	0-1	100	
2210	55.4	0-1	100	
2240	55.4	1-3	100	FDG
2310	55.0	1-3	100	
2340	54.7	1-3	100	
0010	54.1	1-3	100	
0040	54.1	0	100	
0110	54.0	0	100	

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
NET	A	37.° 31' 63.5"	-80.° 39' 31.0"	9	6	2010	0110	MAY 15 2 48 42	—
NET	B	37.° 31' 63.8"	-80.° 39' 29.0"	9	9	2010	0110	2 52 54	—
NET	C	37.° 31' 46.9"	-80.° 39' 18.9"	9	6	2010	0110	2 53 34	—

Net Placement/Site Description: All nets over forested logging road (USFS 10790)

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



BAT CAPTURE DATA

2014

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4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

WEATHER DATA

WEATHER DATA				
Time (xxxx h)	Temp (°F)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2015	50.9	0	100	Overcast
2045	51.4	0	100	
2115	50.9	0	100	
2145	50.9	0	100	
2215	50.9	0	100	
2245	50.5	0	100	
2300	50.5	0	100	mist
2315	50.5	0	100	mist
2344	50.4	0	100	
0015	50.4	0	100	mist
0045	50.4	0	100	
115	50.4	0	100	mist/fog

Project #: 593.12

Date: 18 May 2014

Project Name: nuv

Site Name/ #: A11200 - 1

State: WA

County: Montgomery

GPS Unit #: iPad 283

Camera #: iPod 283

Permitted Biologist: Valerie Clarkston (5-11-2017)

Other Field Staff: Chris Kanazawa

State Permit #: TE: 052394

Federal Permit #: TE02373A-9

SC: 05639-

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude (CDD)	Longitude (CDD)	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37° 31' 6.35"	80° 39' 73.10"	9	6	2015	115	MAY 15 2 48 42	—
Net	B	37° 31' 0.38"	80° 39' 12.90"	9	9	2015	115	2 52 04	—
Net	C	37° 31' 14.69"	80° 39' 71.89"	9	6	2010	115	2 53 34	—
		" N	" W						

Net Placement/Site Description: All north over USFS logging road

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



2014

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HABITAT ASSESSMENT

Project #: 593.12 Date: 19 May 2016 State: GA County: Montgomery
 Project Name: MUP Site Name/ID: A1+200-2 USGS Quad: _____
 Permitted Biologist: Valerie Clarkston Other Field Staff: Chris Kanoza State Permit #: SC:056397 / TE:056396
 (full name) (full name) Federal Permit #: TE02373A-6

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude DD	Longitude DD	Picture #	Waypoint #
Net	A	37 °30'23.64" N	-80 °39'8.84" W	74913	✓
Net	B	37 °30'25.01" N	-80 °39'8.256" W	75041	✓
Net	C	37 °30'25.88" N	-80 °39'7.363" W	75238	✓
		" N	-80 °" W		

Distance to closest water source (meters): 1300 Type of water source: StreamWater source name: Craig Creek

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: _____ meters Channel Width: _____ meters Stream Width: _____ meters

Substratum: _____ Bedrock _____ Boulder _____ Cobble _____ Gravel _____ Sand _____ Silt/Clay

Still Water Present (Y/N): _____ Average Water Depth: _____ m or cm Clarity (H,M,L): _____

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Quercus alba
Quercus montana
Acer rubrum

Subdominant Canopy Species (< 40 cm/16" dbh)

Acer rubrum
Quercus coccinea
Oxydendrum arboreum
Estimated dbh range: Lg: 60cm Sm: 40cmEstimated dbh range: Lg: 40cm Sm: 15cmRelative abundance of dominant vs. subdominant (ratio): 1:20

Estimated canopy closure: _____ Closed _____ X Moderate _____ Open

Roost tree potential consists of: _____ Large Trees _____ X Snags _____ Neither

Roost tree potential for the area is: _____ High _____ X Moderate _____ Low

Roost potential comments: numerous snags along flight corridor (USFS road)

Subcanopy clutter: _____ Closed _____ Moderate _____ X Open

Subcanopy comprised largely of: _____ Lower Branches of Canopy Trees _____ X Saplings _____ Shrubs

Common Subcanopy Species: Acer rubrum Vaccinium spp.
RhododendronHabitat Description: Ridgetop forest split by forest service road

Check all that apply:

<input type="checkbox"/> Mature Upland Forest	<input type="checkbox"/> Recently Logged Forest	<input type="checkbox"/> Crop/Pasture Land	<input type="checkbox"/> Other _____
<input checked="" type="checkbox"/> Young Upland Forest	<input type="checkbox"/> Forest Edge	<input type="checkbox"/> Stream/River	_____
<input type="checkbox"/> Mature Lowland Forest	<input type="checkbox"/> Woodlot	<input type="checkbox"/> Vernal Pool	_____
<input type="checkbox"/> Young Lowland Forest	<input type="checkbox"/> Old Field	<input type="checkbox"/> Deepwater Lake/Pond	_____

Herbaceous Cover: _____ Sparse _____ X Moderate _____ Dense



2014

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HABITAT ASSESSMENT (continued)

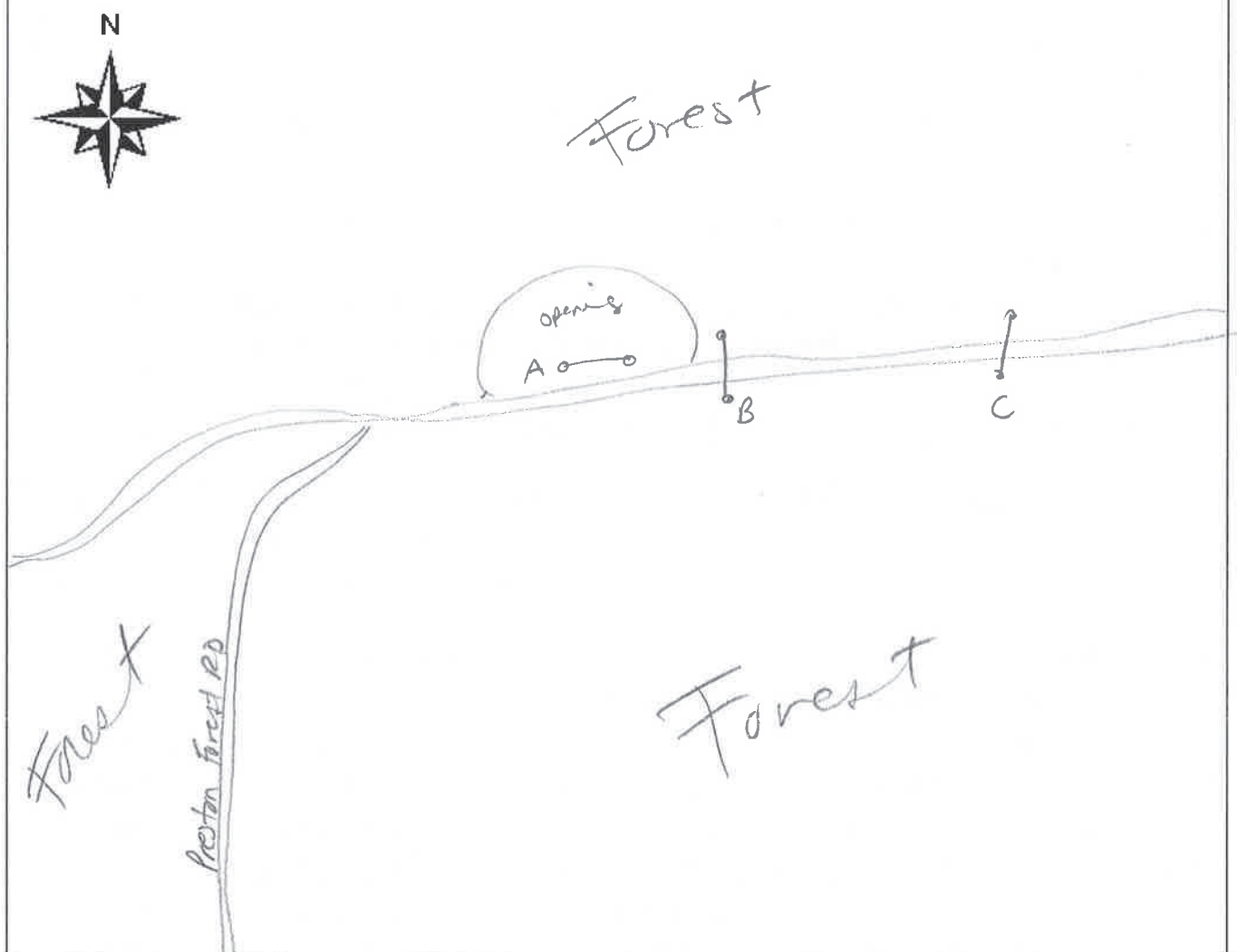
Project #: 593.12

State/County: UA/Montgomery

Site Name/ #: Alt 200-2

Initials: VC

SKETCH NETS and/or DETECTORS



LEGEND

Net: ● — ●

Detector: □

COMMENTS



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WEATHER DATA

Time (xxxx h)	Temp (°F)	Wind Speed (estimated – see chart)	% Cloud Cover (estimated)	Comments
2030	52.2	1-3	20%	—
2100	51.8	1-3	0%	Fall Moon?
2130	51.8	1-3	85%	—
2200	52.2	1-3	100	
2230	51.1	4-7	90	
2300	48.9	4-7	0	
				Cold Out

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude DD	Longitude DD	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37° 30' 23.64	"N -80° 39' 8.84	12	6	2025	2300	MAV 19	—
Net	B	37° 30' 25.01	"N -80° 39' 25.6	9	6	2020	2300	7 50 41	—
Net	C	37° 30' 25.88	"N -80° 39' 13.63	9	6	2020	2300	7 52 38	—
		"N °	"N °						

Net Placement/Site Description: Net A placed @ entrance to small opening in woods; Nets B+C over USFS road

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



Project #: 593.12
Project Name: MUP
State: WA
GPS Unit #: iPad 283
Permitted Biologist: Valene Clarkston
(full name)
State Permit #: PE: 056396
SC: 056397

[illegible]

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude DD	Longitude DD	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37 ° 30 23 64	"N -80 ° 39 88 84	12	6	2015	2200	MAV 19	—
Net	B	37 ° 30 25 01	"N -80 ° 39 82 56	9	6	2015	2205	750 41	—
Net	C	37 ° 30 25 88	"N -80 ° 39 73 63	9	6	2015	2205	752 38	—
		"N	"W						

Net Placement/Site Description: Net A at entrance to small opening in woods. Nets B+C near USFS road.

[illegible]


1 Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



WEATHER DATA

Property of: Environmental Solutions & Innovations, Inc.
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Run out

WEATHER DATA				
Time (xxxx h)	Temp (°C) 	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2030	54.1	8-12	100	Rain in distance
2100	54.3	4-7	100	drizzle
2130	54.0	4-7	100	
2200	54.0	4-7	100	light rain
2230	53.8	1-3	100	
2300	53.8	1-3	100	light rain
2330	53.2	1-3	100	rain
2345	53.1	1-3	100	
				RAIN out

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37 ° 30'23.64"	-80 ° 39'8.84"	12	6	2020	2345	7 49 13	—
Net	B	37 ° 30'35.01"	-80 ° 39'8.256"	9	6	2020	2350	7 50 41	—
Net	C	37 ° 30'25.88"	-80 ° 39'73.63"	9	6	2020	2350	7 52 38	—
		37 °	-80 °						

Net Placement/Site Description: Net A at entrance to small woodland area; Nets B+C over USFS road

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = \uparrow/\downarrow * Refer to table on the back



WEATHER DATA

Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

Permitted Biologist: Valene Clarkston Mother Field Staff: Chris Kanouza
(full name) (full name)

Federal Permit #: TE02373A-9

[illegible]

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
net	A	37 ° 30'23.64"	-80 ° 39'8.84"	12	6	—	—	MAN 19	—
net	B	37 ° 30'25.01"	-80 ° 39'8.256"	9	6	—	—	750 41	—
net	C	37 ° 30'25.88"	-80 ° 39'13.63"	9	6	—	—	752 38	—
		"N	"W						

Net Placement/Site Description: Net A @ woods opening + road; Net B + C over USFS road

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = \uparrow/\downarrow * Refer to table on the back

2014



BAT CAPTURE DATA

Project #: 593.12 Date: 23 May 2016
 Project Name: MUP Site Name#: A14200-2
 State: VA County: Montgomery
 GPS Unit #: iPad 283 Camera #: iPad 283
 Permitted Biologist: Valerie Clarkston
 State Permit #: TE: 056396 Other Field Staff: Chris Kanow
 SC: 056397 Federal Permit #: TE02373A-9

WEATHER DATA					
Time (xxxx h)	Temp (°C) F	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments	
2020	54.5	1-3	75%		
2050	54.1	1-3	75%		
2100	53.6	4-7	25%		
2150	53.1	4-7	0%		
2200	53.4	4-7	0%		
2250	52.9	4-7	10%		
2300	52.2	4-7	0%		
2350	51.8	4-7	0%		
0020	51.8	4-7	0%		
0050	51.8	1-3	0%		
120	51.6	0	0%		

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude DD	Longitude DD	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37° 30' 23.64" N	80° 39' 88.84" W	12	6	2020	120	MAV19	
Net	B	37° 30' 25.01" N	80° 39' 25.6" W	9	6	2020	120	7 49 13	
Net	C	37° 30' 25.88" N	80° 39' 36.3" W	9	6	2015	120	7 50 41	
		37° 30' 25.88" N	80° 39' 36.3" W					7 52 38	

Net Placement/Site Description: Net A placed at entrance to small opening in forest. Net B+C over USFS road

Capt #	Net/Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro. ¹	Wt (g)	RFA (mm)	Belly (F/M/E)	Wing Index* (0-3)	Picture # /Guano/Hair Sample/Band #	Comments
1	B	Lasiurus borealis	2150	Ad	F	PS	13.7	40	F	0		
2	A	Lasiurus borealis	2240	Ad	M	↑	9.8	42	M	0		
3	C	Lasiurus noctivagus	2250	Ad	M	↑	10.2	41	E	0		
4	C	Lasiurus borealis	2350	Ad	M	↑						Not escape

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

BAT CAPTURE DATA (continued)

Project #:

Date:

Project Name:

Site Name/#:

Initials:[illegible]

Wind Speed (mph)	Description	Visible Condition
0	Calm	Smoke rises vertically
1-3	Light Air	Direction of wind shown by smoke but not by wind vanes
4-7	Light Breeze	Wind felt on face; leaves rustle; ordinary wind vane moved by wind
8-12	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag
13-18	Moderate Breeze	Raises dust and loose paper; small branches are moved
19-24	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets on inland water
25-31	Strong Breeze	Large branches in motion; telephone wires whistle; umbrellas used with difficulty
32-38	Moderate Gale	Whole trees in motion; inconvenience in walking against wind
39-46	Fresh Gale	Breaks twigs off trees; generally impedes progress

Score	Description
0	No damage. Fewer than 5 small scar spots are present on the membranes.
1	Light damage. Less than 50% of flight membrane is depigmented (spotting), which is often visible only with transillumination.
2	Moderate damage. Greater than 50% of wing membrane covered with scar tissue (spotting). Scarring is visible without transillumination. Membrane exhibits some necrotic tissue and possibly few small holes (<0.5 cm diameter). Forearm skin may be flaking and discolored along the majority of the forearm.
3	Heavy damage. Deteriorated wing membrane and necrotic tissue. Isolated holes >0.5 cm are present in membranes. Necrotic or receding plagioplaquium and/or ectodermatium are evident.



BAT CAPTURE DATA

Project #: 593.12 Date: 24 May 2016
 Project Name: MUP Site Name#: A14200-2
 State: VA County: Montgomery
 GPS Unit #: iPad 283 Camera #: iPad 283
 Permitted Biologist: Valerie Clarkston Other Field Staff: Chr's kano2a
 State Permit #: TE: 056396 Federal Permit #: TE02373A-9
SC: 056397 (full name)

WEATHER DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2020	67.1	1-3	0%	
2050	65.8	1-3	25%	
2120	65.7	1-3	0%	
2150	64.8	1-3	0	
2220	64.0	1-3	0	
2250	63.1	1-3	0	
2320	63.1	1-3	0	
2350	62.6	1-3	0	
0020	61.7	1-3	0	
0050	61.7	1-3	0	
0120	61.4	1-3	0	

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude DD	Longitude DD	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37° 30' 23.64" N	-80° 39' 88.84" W	12	6	2030	130	MAY 19	---
Net	B	37° 30' 25.01" N	-80° 39' 25.6" W	9	6	2025	2025	7 50 41	---
Net	C	37° 30' 25.88" N	-80° 39' 7.363" W	9	6	2020	2020	7 52 38	---
		37° 30' 25.88" N	-80° 39' 7.363" W						

Net Placement/Site Description: Net A at entrance to woodland opening; Net B+C over USES road

Capt #	Net/Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro. ¹	Wt (g)	RFA (mm)	Belly (F/M/E)	Wing Index* (0-3)	Picture # /Guano/Hair Sample/Band #	Comments
1	B	Eptesicus fuscus	2150	Ad	F	PG	22.6	49	F	0	Mites	
2	A	Eptesicus fuscus	2250	Ad	F	PG	16.5	44	F	0		
3	A	Lasionycteris borealis	2300	Ad	M	↑	10.4	38	M	0		
4	B	Eptesicus fuscus	0030	Ad	F	PG	20.2	46.5	F	0		
5	A	Lasionycteris borealis	0100	Ad	M	↑	9.8	38	E	0		

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑/↓ * Refer to table on the back



2014

Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

HABITAT ASSESSMENT

Project #: 593.12 Date: 25 May 2016 State: VA County: Montgomery
 Project Name: MVP Site Name#: A14200-3 USGS Quad: _____
 Permitted Biologist: Valerie Clarkston Other Field Staff: Chris Kanoza State Permit #: TE: 056396 / SC: 056397
 (full name) (full name) Federal Permit #: TE02373A-9

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Picture #	Waypoint #
<u>Net</u>	<u>A</u>	<u>37 ° 314485 "N</u>	<u>-80 ° 399540 "W</u>	<u>MAY 26</u> <u>7 23 39</u>	<u>—</u>
<u>Net</u>	<u>B</u>	<u>37 ° 314 427 "N</u>	<u>-80 ° 399241 "W</u>	<u>7 23 55</u>	<u>—</u>
<u>Net</u>	<u>C</u>	<u>37 ° 314 394 "N</u>	<u>-80 ° 398412 "W</u>	<u>7 27 27</u>	<u>—</u>
		<u>"N</u>	<u>"W</u>		

Distance to closest water source (meters): 0 Type of water source: Stream
 Water source name: Craig Creek

ESTIMATED WATER SOURCE CHARACTERISTICS (IF UNDER NETS OR DETECTOR):

Bank Height: 1-4 meters Channel Width: 9 meters Stream Width: 6 meters
 Substratum: ☒ Bedrock ☐ Boulder ☐ Cobble ☒ Gravel ☐ Sand ☒ Silt/Clay
 Still Water Present (Y/N): Y Average Water Depth: 1.5 m or cm Clarity (H,M,L): H

VEGETATION:

Dominant Canopy Species (> 40 cm/16" dbh)

Quercus coccinea
Quercus alba
Pinus virginiana

Subdominant Canopy Species (< 40 cm/16" dbh)

Quercus coccinea
Quercus alba
Pinus virginiana

Estimated dbh range: Lg: 75cm Sm: 40cmEstimated dbh range: Lg: 40cm Sm: 20cmRelative abundance of dominant vs. subdominant (ratio): 1:10

Estimated canopy closure: ☐ Closed ☒ Moderate ☐ Open
 Roost tree potential consists of: ☒ Large Trees ☒ Snags ☐ Neither
 Roost tree potential for the area is: ☒ High ☐ Moderate ☐ Low
 Roost potential comments: A lot (>20) snags along bank

Subcanopy clutter: ☐ Closed ☐ Moderate ☒ Open
 Subcanopy comprised largely of: ☐ Lower Branches of Canopy Trees ☒ Saplings ☐ Shrubs

Common Subcanopy Species: Acer rubrum Pinus virginiana
NYSSA sylvatica

Habitat Description: Riparian area flanked by powerline ROW

Check all that apply:

☐ Mature Upland Forest ☐ Recently Logged Forest ☐ Crop/Pasture Land ☐ Other _____
☐ Young Upland Forest ☒ Forest Edge ☒ Stream/River _____
☐ Mature Lowland Forest ☐ Woodlot ☐ Vernal Pool _____
☒ Young Lowland Forest ☐ Old Field ☐ Deepwater Lake/Pond _____

Herbaceous Cover: ☐ Sparse ☐ Moderate ☒ Dense



2014

Property of: Environmental Solutions & Innovations, Inc.
4525 Este Avenue, Cincinnati, OH 45232 (Phone: 513-451-1777)

HABITAT ASSESSMENT (continued)

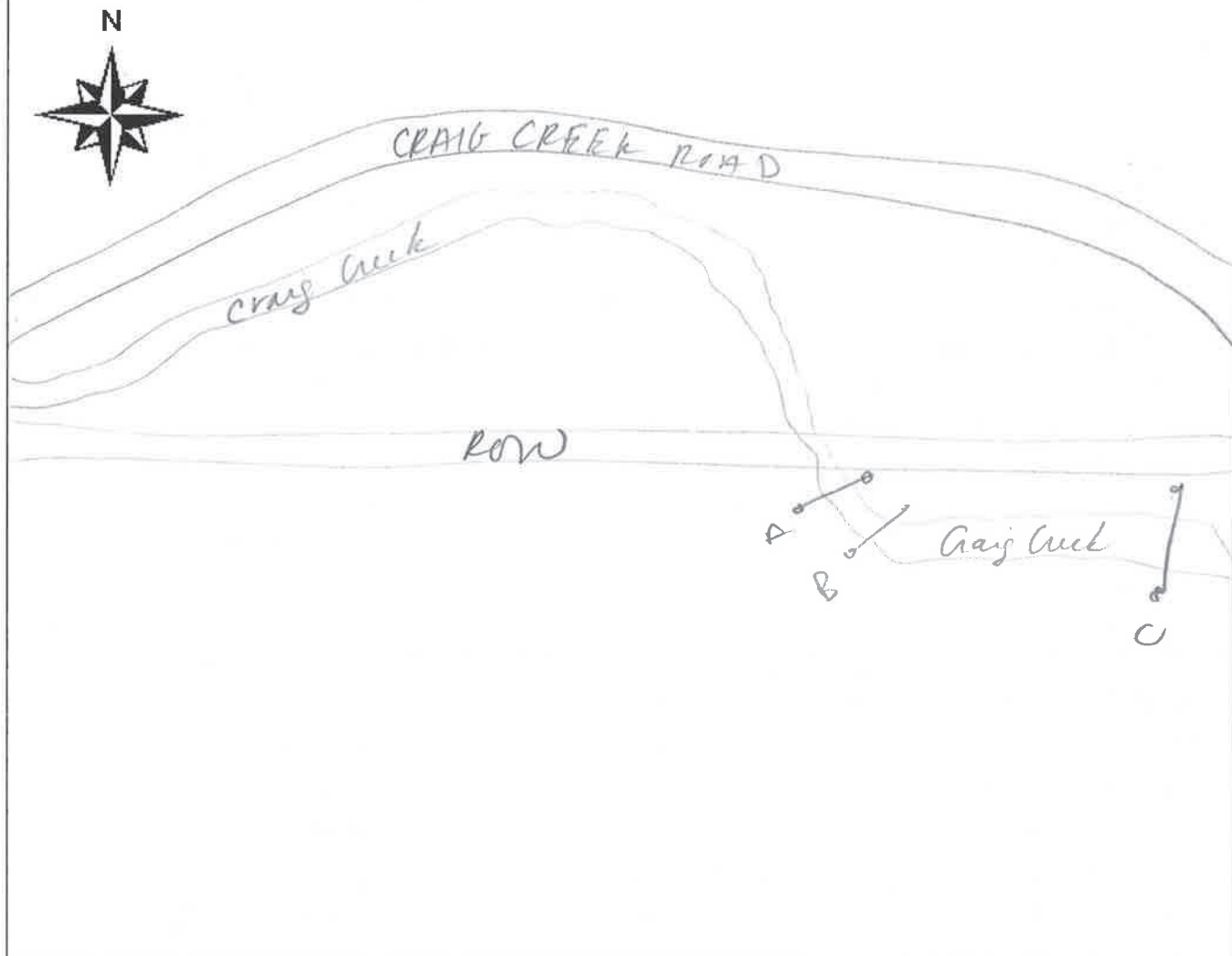
Project #: 59312

State/County: VA/Montgomery

Site Name/ #: A11200-3

Initials: UC

SKETCH NETS and/or DETECTORS



LEGEND

Net: ● — ●

Detector:

COMMENTS



BAT CAPTURE DATA

Project #: 593.12 Date: 25 May 2016
 Project Name: MVP Site Name#: AH200-3
 State: VA County: Montgomery
 GPS Unit #: iPad 283 Camera #: iPad 283
 Permitted Biologist: Valerie Clarkston (full name)
 State Permit #: TE056396 Other Field Staff: Chris Korman (full name)
 Federal Permit #: TE02373A-9

WEATHER DATA

Time (xxxx h)	Temp (°F)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2030	66.5	0	0	
2100	63.9	0	0	
2130	61.3	0	0	
2200	60.8	0	0	
2230	60.3	1-3	0	
2300	58.6	0	0	
2330	58.5	0	0	
0000	57.7	0	0	
0030	57.6	0	0	
0100	56.5	0	0	
0130	56.5	1-3	0	

Net/Trap/ Detector	Net/Trap/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Net	A	37° 31' 40.85" N	-80° 39' 54.0" W	6	9	2020	2020	MAY 26	---
Net	B	37° 31' 44.27" N	-80° 39' 54.1" W	9	6	2025	2025	7 23 39	---
Net	C	37° 31' 43.94" N	-80° 39' 54.12" W	9	6	2030	0130	7 23 55	---
		37° 31' 43.94" N	-80° 39' 54.12" W					7 27 27	---

Net Placement/Site Description: all nets over Craig Creek

Capt #	Net/ Trap	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro. ¹	Wt (g)	RFA (mm)	Belly (F/M/E)	Wing Index* (0-3)	Picture # / Guano/Hair Sample/Band #	Comments
1	C	Lasurus borealis	2110	Ad	M	↑	10.8	37	M	0	Tear in right wing	
2	C	Eptesicus fuscus	2125	Ad							Net escape	
3	C	E. fuscus	2300	Ad	M	↑	16	45	F	0		
4	A	Lasionycteris noctivagans	2320	Ad	M	↑	10.2	39	F	0		
5	B	Eptesicus fuscus	2325	Ad	M	↑	14.2	46	M	0		
6	C	Lasionycteris noctivagans	0010	Ad	M	↑	13.8	42	F	0		
7	B	Eptesicus fuscus	0115	Ad	M	T	14.6	47	F	0		

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = ↑↑ * Refer to table on the back



Project #: 593.12
Project Name: MVP
State: VA
GPS Unit #: iPad 283
Permitted Biologist: Valerie Clarkston
(full name)
State Permit #: TE: 056396
SC: 056397

BAT CAPTURE DATA

Time (xxxx h)	Temp (°C)	Wind Speed (estimated - see chart)	% Cloud Cover (estimated)	Comments
2030	16.4	0	0	humid
2100	15.5	0	0	
2130	14.0	0	0	
2200	12.6	0	0	
2230	11.9	0	0	
2300	11.2	0	0	
2330	10.3	1-3	0	
0000	59.7	0	0	
0030	59.5	1-3	0	
0100	58.8	1-3	0	
0130	58	0	0	

Net/Trip/ Detector	Net/Trip/ Detector #	Latitude	Longitude	Length (m)	Height (m)	Time Up (xxxx h)	Time Down (xxxx h)	Picture #	Waypoint #
Ner	A	37 ° 31'49.85 "N	-80 ° 39'57.40 "W	6	9	2030	130	MAY 26 7 23 39	—
Ner	B	37 ° 31'49.27 "N	-80 ° 39'57.41 "W	9	6	2030	135	7 23 55	—
Ner	C	37 ° 31'49.94 "N	-80 ° 39'57.42 "W	9	6	2030	140	7 27 27	—
		"N	"W						

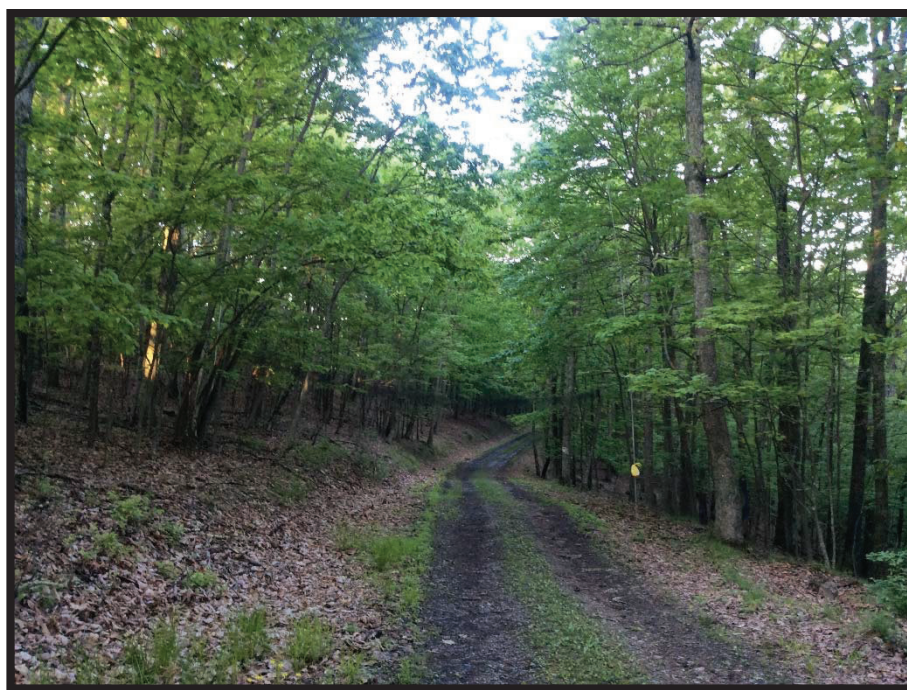
Net Placement/Site Description: 40 nets over Long Creek

[illegible]

¹ Reproductive Condition: Female = NR/PG/L/PL; Male = \uparrow/\downarrow * Refer to table on the back



ALT200-1



ALT200-2



ALT200-3