APPENDIX F-3 – BAT MONITORING SURVEY RESULTS

August 12, 2016

Susi von Oettingen
USFWS New England Field Office
70 Commercial Street, Suite 30
Concord, NH 03301

Project	NTE Connecticut, LLC Killingly Energy Center Northern Long-eared Bat (NLEB) Presence/Absence Survey
Town	Killingly, Connecticut
Surveyor Name/Firm	Clinton Parrish/Tetra Tech, Inc.
Detector Operation Dates	June 2-9, 2016
Survey Results	**NLEB NOT DETECTED**

Dear Ms. Von Oettingen:

This report contains the results of the northern long-eared bat (*Myotis septentrionalis*, hereafter NLEB) summer presence/absence survey for the Killingly Energy Center (the Project) in Killingly, CT. Acoustic detectors deployed by Tetra Tech did not detect NLEB. Two recorded bat calls (bat passes) were identified as NLEB by the auto-classification software, but were found to be misclassified during qualitative review. Additional calls auto-classified as Myotis species were reviewed and no NLEB bat passes were identified.

All nine species of bat found in Connecticut are of conservation concern, per the Connecticut Department of Energy and Environmental Protection (CTDEEP), and eight are classified as "listed species" (i.e., threatened, endangered or special concern) (CTDEEP 2015). The presence of five species was confirmed: eastern red bat (*Lasiurus borealis*); big brown bat (*Eptesicus fuscus*); hoary bat (*Lasiurus cinerius*); silver-haired bat (*Lasionycteris noctivagans*); and little brown bat (*Myotis lucifugus*).

As a precautionary conservation measure, tree clearing for the Project will be restricted in accordance with the requirements of Section 4(d) of the Endangered Species Act, and will not occur in the months of June or July, in order to avoid the pup season for the bats. Significant wooded areas will remain on the site and in the vicinity, with expansion of edge effect habitat providing for additional foraging lanes for bat species.

PROJECT DESCRIPTION

The purposes of the survey were to provide information on federally threatened or endangered species that have the potential to occur at the Project site, and to supplement natural resource surveys for this area. The 73-acre Project site is located off of Lake Road in Killingly, CT (Figure 1). The proposed Project will consist of an electric generating facility (on the Generating Facility Site), that will require approximately 23.5 acres of tree clearing in the portion of the site closest to Lake Road. In addition, an electrical interconnection switchyard will be located on the Switchyard Site; less than 1.5 acres of clearing will be required on that parcel.

METHODS

The summer presence/absence survey was conducted in accordance with the U.S. Fish and Wildlife Service (USFWS) *2016 Range-wide Indiana Bat Summer Survey Guidelines – April 2016* (*Indiana Bat and Northern Long-eared Bat Guidelines*; Guidelines). This survey plan utilized a two-phased approach:

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451 Presumpscot Street, Portland, Maine 04103
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Phase 1, desktop and field-based habitat assessments, and Phase 2, acoustic surveys. Acoustic detectors were deployed during field assessments and resulting data were processed using Kaleidoscope Pro v 3.1.5. Qualified Tetra Tech personnel carried out all phases of the survey and specific roles are summarized in Table 1; resumes for relevant staff are provided in (Appendix A).

Table 1. Personnel involved in NLEB Acoustic Presence/Absence Surveys and analyses for Killingly Energy Facility, June 2016.

Personnel	Desktop Analysis	Field Assessment	Detector Deployment	Acoustic Analysis	Qualitative Analysis
Derek Hengstenberg *Wildlife Biologist*	X				
Clinton Parrish *Wildlife Biologist*		X	X	X	X
Katelin Craven *Wildlife Biologist*					X

HABITAT ASSESSMENT

Desktop Analysis

Prior to conducting field work, a desktop land cover analysis was performed to identify suitable NLEB habitat (Figure 1). Specifically, aerial photography and Google Earth images were reviewed to determine areas that may be used by NLEB for foraging and roosting during the breeding and migration seasons. Determinations were based on forest patch size, proximity to closed-canopy forests, and landscape features that may be used by bats commuting between roosting and foraging habitats (e.g., forested tracts, wetlands, streams). All open water, wetlands, and relatively contiguous forested lands not highly fragmented by residential or commercial developments were considered suitable NLEB habitat, and all densely populated or developed stretches were determined to be unsuitable. The level of effort was determined based on the assumption that suitable habitat within the facility is non-linear.

Suitable areas included: forested edge surrounding the powerline corridor; and all other forested or wetland areas and associated canopy gaps.

On June 2, 2016, Tetra Tech personnel conducted a site visit to verify the presence of NLEB habitat identified during the desktop analysis and to deploy the acoustic full spectrum detectors. Detectors were deployed for the nights of June 2 through June 9. General habitat descriptions are provided below in Table 2. The completed Phase 1 Summer Habitat Assessment forms are included in Appendix B, and photographs of detectors and habitats are in Appendix C.

Table 2. Station descriptions and survey data at Killingly Energy Center, June 2016.

Station	Suitable NLEB Habitat?	Description	GPS Coordinates	Survey Dates	Survey Hours
1	Y	Closed canopy flight path between rocky ridge and red maple wetland.	Latitude: 41°51'55.11"N Longitude: 71°55'3.22"W	Acoustic survey was conducted during eight nights (June 2 through June 9 2016)	Detector set to begin recording 1 hour prior to sunset (19:21) to 1 hour following sunrise (06:10)
2	Y	Mature, mixed forests dominated by white pine. Adjacent to a slight oak ridge with open mid and understory.	Latitude: 41°51'43.52"N Longitude: 71°55'1.22"W		

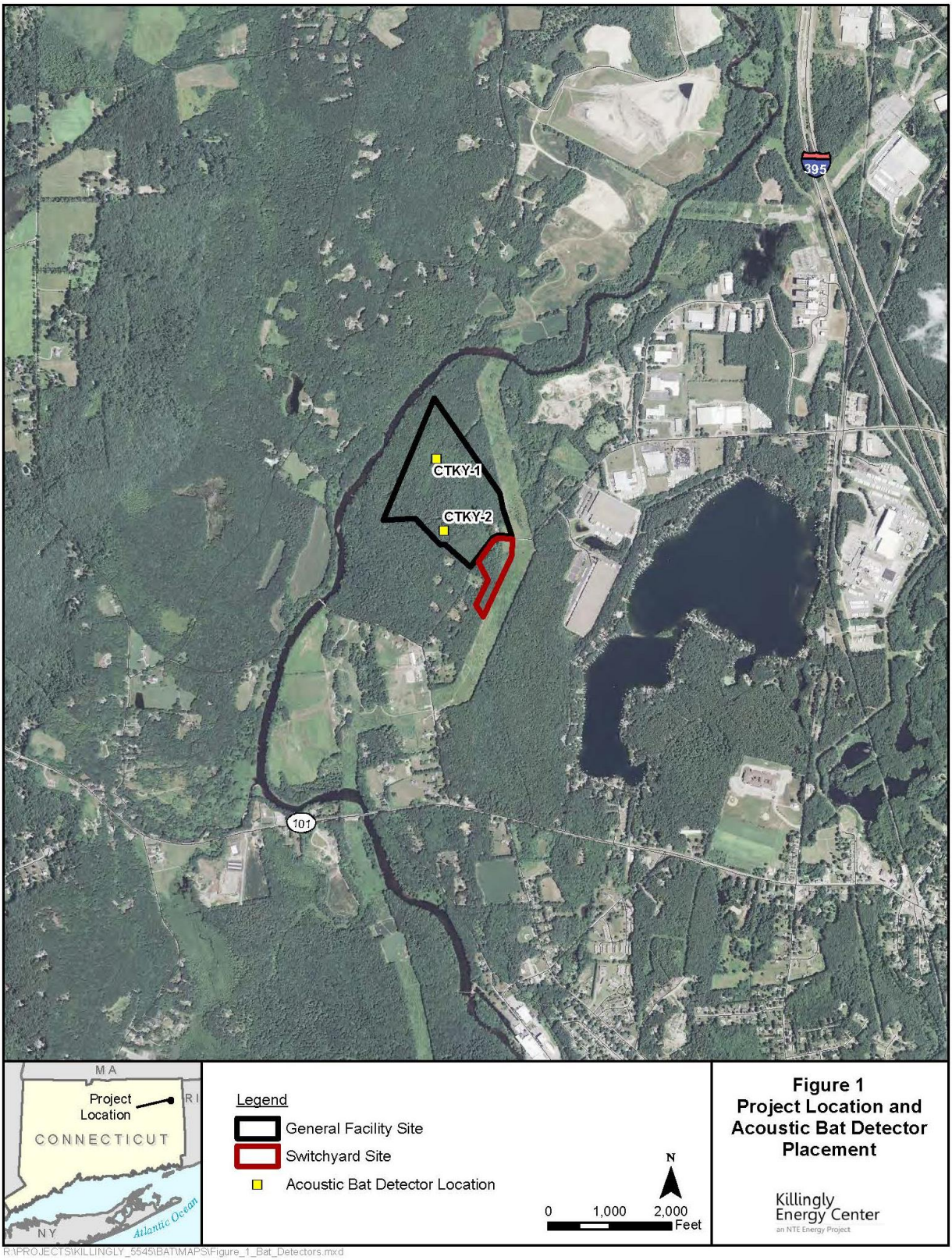


Figure 1. Locations of acoustic detectors deployed at Killingly Energy Center on June 2–9, 2016.

Field Assessment

ACOUSTIC PRESENCE/ABSENCE SURVEYS

Detector Type

Wildlife Acoustics Song Meter-3 BAT (SM-3) ultrasonic bat detector/recorders (Wildlife Acoustics, Inc., Massachusetts, USA) equipped with SMM-U1 omnidirectional microphones were used for the duration of the survey effort. Detectors were set to record from one hour prior to sunset to one hour following sunrise in full-spectrum mode and files were saved in .wav format on internal SD cards. Detectors and accessories are fully waterproof and were powered by internal D cell batteries. Each detector and microphone was tested prior to deployment with a Wildlife Acoustics Ultrasonic Calibrator to ensure equipment was functioning properly and sensitivities were within thresholds. Once detectors were set, a "snap test" was used to ensure all connections were sound and microphones were registering high frequency noise. Log files were reviewed when units were pulled to verify proper functioning for the duration of the survey.

Detector Deployment

Two detectors were micro-sited within the facility in the nearly contiguous forest. Station one was established within a closed canopy (80 percent canopy cover) flight path between a rocky ridge and red maple wetland. The flight path led to an excellent flyway or canopy gap just outside the Project area. The forest dominant species were red oak, birch, white pine, hemlock, and hickory with a diverse size composition. A second detector was deployed in a mature, mixed forest adjacent to a slight oak ridge with open mid and understory to ensure that a variety of potential habitats were sampled in accordance with the USFWS Guidelines. The forest consisted mainly of white pine, red oak, and red maple. Cavities were observed in snags immediately adjacent to the detector. The nearest perennial water source is the Quinebaug River 250 m away from Station 1 and 350 m from Station 2. Where possible, detectors were deployed in the following habitat types in order of descending priority (i.e., detector deployment in openings within interior forests will be prioritized, then within interior closed canopy forests, etc.):

- Interior forest-canopy openings.
- Closed canopy forests.
- Near water sources adjacent to forested habitat.
- Forest edges.
- Linear forested corridors, including corridors connecting forested habitat blocks.

Microphones were mounted on stakes and fastened to metal posts at a height of 2.5 meters (8 feet) to avoid ground vegetation and to elevate the cone of detection. Microphones were oriented in line with suspected flight paths to increase the number of call pulses and quality of recordings (i.e., specific orientation was determined by microsite conditions). Appendix C includes site conditions and photographs depicting detector orientation.

Following is a summary of the acoustic summer presence/absence survey effort:

- The total suitable habitat was determined to be 70 acres.
- Two detectors were deployed from June 2–9, for a total of 16 detector-nights.

ANALYSIS

Tetra Tech analyzed the recorded data according to the USFWS Guidelines. Full spectrum .wav files were first converted to zero-crossing (ZC) using a division ratio of 8. Data was then scrubbed and analyzed using Kaleidoscope Pro (Wildlife Acoustics, Inc.) version 3.1.5 using the classifier "Bats of North America 3.1.0" at a sensitivity level of "-1 more sensitive/liberal." The region selected was the state of Connecticut. Signals of interest ranged from 8–120 kHz lasting 2–500 ms with a minimum of 2 call pulses. All files auto-classified as *Myotis* species were subsequently manually reviewed using SonoBat v 4.0.6. Results were summarized by site and night.

RESULTS

Weather conditions during the survey period meet requirements outlined in the Guidelines for 6 out of the 8 nights. Summary of weather conditions are available in Table 3 and more details are provided in Appendix

D (Weather Underground 2016). Rain occurred on June 5, accumulating 0.62 inches from 8:30 to 10 pm and on June 7 0.04 inches accumulated between 9 and 10 pm. Nights with rain for over 30 minutes during the first five hours of the survey do not count towards the minimum of 4 detector nights required for a presence absence survey, which leaves 12 detector nights.

On the nights of June 2 through June 9, 496 bat passes were recorded at the two stations (Table 4). Two bat passes were auto-classified as NLEB, but were determined through manual vetting to not possess the call qualities of NLEB. Both were determined to be Low Frequency calls. A total of 39 additional calls auto-classified as little brown bat and Indiana bat were manually reviewed for false negative NLEB calls and to confirm the presence of little brown bat and Indiana bat. Of the 39 recordings, only two bat passes were confirmed as little brown bat (Figure 2), the remainder were determined to belong to eastern red bat (n=23), big brown bat (n=1), or identified as high frequency (n=13) due to lack of call pulses and detail. One of the calls identified as a little brown bat was originally auto-classified as Indiana bat, however the Project area is 50 miles outside of Indiana bat range. Because little brown bat and Indiana bat passes are indistinguishable through manual vetting it is not possible to determine it is not an Indiana bat, but it is unlikely to be an Indiana bat due to the location. Note also the number of calls does not necessarily correlate to numbers of bats present, as individuals frequently pass a number of times through a given area.

Table 3. Summary of Site Conditions on the nights of June 2 through June 9, 2016 at Killingly Energy Center, CT.

Date	Temp Night High	Temp Night Low	Wind Speed	Precipitation	Notes
6/2/2016	75	61	calm to 8 mph	0.00in	
6/3/2016	63	61	mostly calm up to 8 mph	0.00in	
6/4/2016	69	64	5 mph	0.00in	
6/5/2016	68	65	3.6-10 mph	0.62in	8:30-10:00pm rain
6/6/2016	81	63	calm to 9 mph	0.00in	
6/7/2016	75	57	3.5 to 15 mph	0.04in	9pm rain
6/8/2016	65	55	7-17 mph	0.00in	
6/9/2016	63	53	3.5-10 mph	0.00in	

Table 4. Summary of bat passes on the nights of June 2 through June 9, 2016 at Killingly Energy Center, CT.

Site	Date	Big Brown Bat	Eastern Red Bat	Hoary Bat	Silver-haired Bat	Small-footed Bat	Little Brown Bat	NLEB	Indiana Bat	Tri-colored Bat	HiFq	LoFq	Grand Total
CTKY-1	6/2/2016	1		1									2
	6/3/2016	5			4								9
	6/4/2016	12			1								13
	6/5/2016	2		1									3
	6/6/2016	3											3
	6/7/2016	10		7	5								22
	6/8/2016	27										2	29
	6/9/2016	1		1	1								3
	Total	**61**		**10**	**11**							**2**	**84**
CTKY-2	6/2/2016	39	11	1	16						3		70
	6/3/2016	69	9	11	13						3		105
	6/4/2016	4		10	9								23
	6/5/2016			2	2								4
	6/6/2016	29		3	4								36
	6/7/2016	94	15	2	14		2				1		128
	6/8/2016	26									3		29
	6/9/2016	7	2	5							3		17
	Total	**268**	**37**	**34**	**58**		**2**				**13**		**412**
Grand Total		**329**	**37**	**44**	**69**		**2**				**12**	**2**	**496**

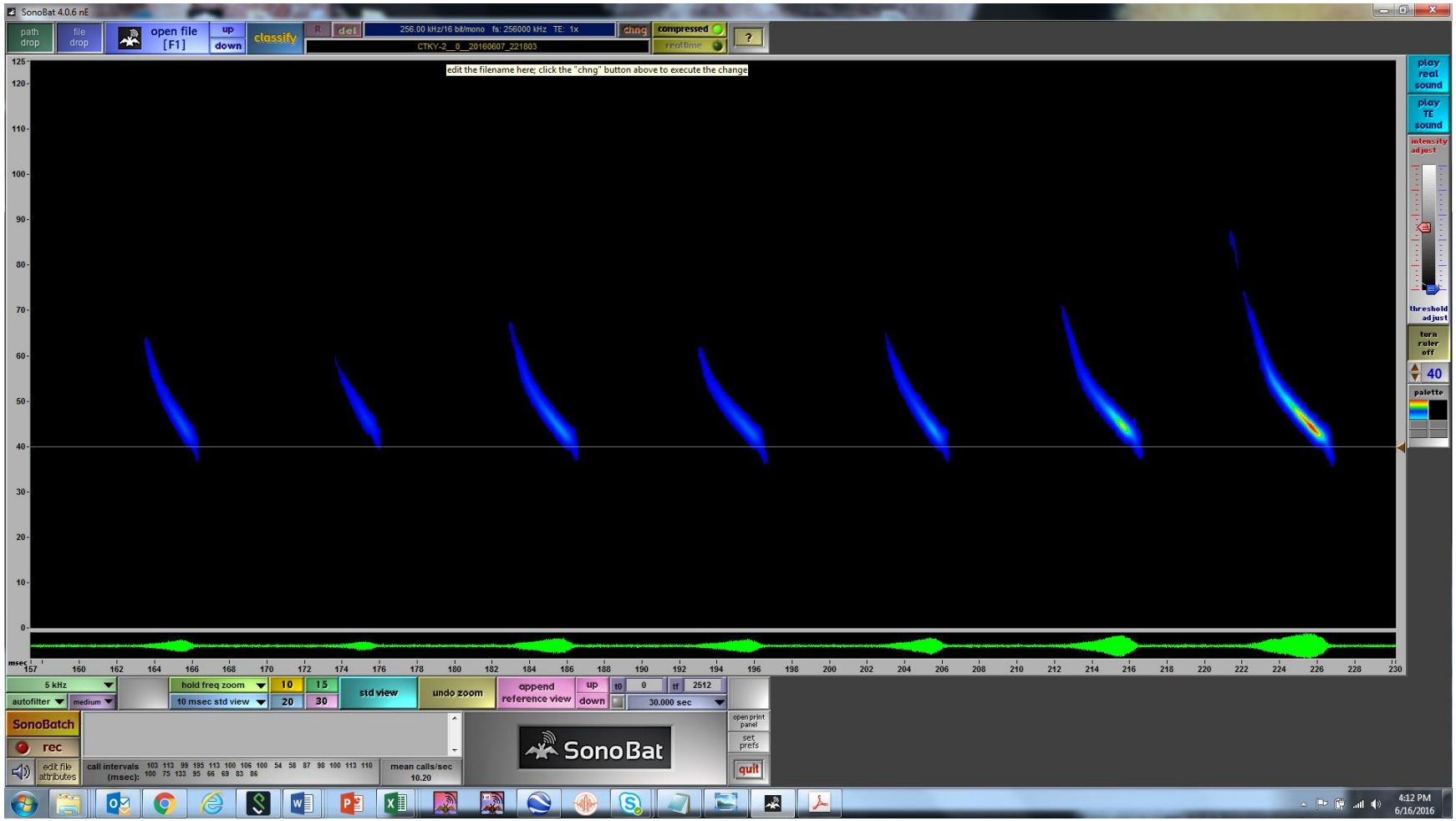


Figure 2. Screenshot of little brown bat call detected at Station 2 on the night of June 7, 2016 at Killingly Energy Center.

Maximum Likelihood Estimates (MLEs) suggested species presence for big brown bat, eastern red bat, hoary bat, little brown bat, and Indiana bat (Table 5). Given that 69 bat passes were auto-classified as silver-haired bat, it is likely that that this species is also present at the Project site, but there was not sufficient statistical evidence of presence or the classification error for this species was not a good fit for this particular dataset. Indiana bats are likely not present in the area due to the Project location being 50 miles outside of Indiana bat range.

Table 5. Summary of Maximum Likelihood Estimates (MLEs) for species presence by Kaleidoscope Pro on the nights of June 2 through June 9 at Killingly Energy Center.

Site	Date	Big Brown Bat	Eastern Red Bat	Hoary Bat	Silver-haired Bat	Small-footed Bat	Little Brown Bat	NLEB	Indiana Bat	Tri-colored Bat
CTKY-1	2-Jun	0.22	1.00	**0.05**	1.00	1.00	1.00	1.00	1.00	1.00
	3-Jun	**0.01**	1.00	1.00	0.16	1.00	1.00	1.00	1.00	1.00
	4-Jun	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	5-Jun	**0.04**	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00
	6-Jun	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	7-Jun	**<0.005**	1.00	**0.00**	0.84	1.00	1.00	1.00	1.00	1.00
	8-Jun	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	9-Jun	0.49	1.00	0.06	0.81	1.00	1.00	1.00	1.00	1.00
CTKY-2	2-Jun	**0.00**	**0.01**	0.88	0.09	1.00	**<0.005**	1.00	0.72	1.00
	3-Jun	**0.00**	0.12	**<0.005**	1.00	1.00	**<0.005**	1.00	**0.03**	1.00
	4-Jun	0.34	1.00	**0.00**	0.07	1.00	1.00	1.00	1.00	1.00
	5-Jun	1.00	1.00	**<0.005**	0.47	1.00	1.00	1.00	1.00	1.00
	6-Jun	**0.00**	1.00	**0.03**	1.00	1.00	1.00	1.00	1.00	1.00
	7-Jun	**0.00**	**0.02**	0.83	1.00	1.00	**0.00**	1.00	0.33	1.00
	8-Jun	**0.00**	1.00	1.00	1.00	1.00	**<0.005**	1.00	1.00	1.00
	9-Jun	**<0.005**	0.61	**<0.005**	1.00	1.00	**<0.005**	1.00	1.00	1.00

Note: Maximum Likelihood Estimates (MLEs) interpretation – values <0.05 indicates there is 95% confidence that the species is present. **Bold** values indicate significance.

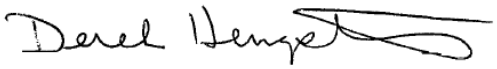
CONCLUSION

The federally listed threatened NLEB was not detected at the Project site. However, five bat species were identified, among them four of the eight state-listed bats – the eastern red bat, hoary bat, silver-haired bat, and little brown bat – were detected during the survey (June 2–9, 2016) (USFWS 2016b). The four species not detected during the survey (Indiana bat, NLEB, tri-colored bat, small footed bat) are federally or state-listed (i.e., endangered or special concern).

As a precautionary conservation measure, tree clearing for the Project will be restricted in accordance with 4(d) requirements, and will not occur in the months of June or July, in order to avoid the pup season for the bat species. Significant wooded areas will remain on the site and in the vicinity, with expansion of edge effect habitat providing for additional foraging lanes for bats. The area will continue to provide habitat suitable for bat use during the summer activity period, given that substantial forested area will remain, additional edge habitat will be created, and other nearby forested areas are located in proximity.

Please be in touch if you have any questions about this report: derek.hengstenberg@tetratech.com or 207-358-2401.

Very truly yours,



Derek Hengstenberg
Certified Wildlife Biologist/ Project Manager

REFERENCES

Connecticut Department of Energy and Environmental Protection (CTDEEP). 2015. Connecticut's Wildlife Action Plan. http://www.ct.gov/deep/cwp/view.asp?a=2723&q=329520&deepNav_GID=1719#Review Accessed June 2016.

USFWS. 2016a. 2016 Range-Wide Indiana Bat Summer Survey Guidelines April 2016. Available online at: http://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2016IndianaBatSummerSurveyGuidelines11April2016.pdf. Accessed May 2016.

USFWS. 2016b. Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat. Federal Register 81(9): 1900-1922. Available online at: http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/FRnlebFinal4dRule14Jan2016.pdf. Accessed May 2016.

Weather Underground. 2016. Killingly, CT Hourly Weather History and Observations. https://www.wunderground.com/history/airport/KIJD/2016/06/16/DailyHistory.html?req_city=Killingly&req_state=CT&reqdb.zip=06239&reqdb.magic=2&reqdb.wmo=99999. Accessed June 2016.

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APPENDIX A
RELEVANT STAFF RESUMES

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Experience Summary

Mr. Parrish has more than seven years of experience conducting wildlife and habitat projects in the Northeast, California, and Idaho. His responsibilities have been distributed over a wide variety of terrestrial and aquatic projects with a particular emphasis on avian ecology, avian response to wind development, avian and bat acoustic monitoring, physical and biological stream surveys, habitat assessment and management, and carnivore monitoring. Most recently, Mr. Parrish lead a multiyear investigation in northern New Hampshire on the impacts of wind development on high-elevation avian species with a focus on Bicknell's Thrush, a federal species of concern. Mr. Parrish is an experienced field biologist who has served as project lead as a consultant for New Hampshire Department of Fish and Game and as an employee for state and federal agencies. Mr. Parrish is proficient with data management and analysis using MS Access, GIS, and the program R.

Education

MS, Biology, Plymouth State University, 2013
BS, Environmental Biology, Magna Cum Laude, Plymouth State University, 2003

Registrations/Certifications

Geographic Information Systems; University of Idaho; 2012

Training

Aquatic Invasive Species Detection and Prevention; 2010
National Environmental and Policy Act (NEPA); 2010
CPR/ First Aid; 2015

Corporation Project Experience

Wildlife Biologist, July 2014–Present
US Navy, Shorebird Monitoring, Naval Station Cutler, ME

Mr. Parrish is conducting bi-monthly shorebird surveys in accordance with International Shorebird Survey (ISS) protocol. Several habitats adjacent to the project area have been identified as Important Bird Areas (IBAs) by Maine Audubon for contributions as critical migration stop-over habitats and warrant standardized long-term monitoring to contribute to migratory bird population data.

Data Analyst and Reviewer, January 2013–Present
U.S. Fish and Wildlife Service (USFWS), Acoustic Bat Monitoring, East Coast

Mr. Parrish was one of two Tetra Tech employees responsible for managing, processing, and reviewing acoustic bat recordings for up to 32 National Wildlife Refuges (NWR) on the east coast from 2012 and 2013. File formats and level of organization varied depending on refuge, and was arranged in standardized directories prior to processing using either full spectrum (Sonobat) or zero cross (BCID) classification software. Automated classifications were then summarized and qualitatively vetted (i.e., manually reviewed on a spectrogram) to determine accuracy of automated classification. Mr. Parrish will be processing acoustic data for 8 NWRs and qualitatively reviewing data for a total of 32 NWRs in 2015.

Wildlife Biologist, March 2015–Present
NAVFAC, Acoustic Bat Monitoring, VA and NJ

Mr. Parrish deployed a total of 16 acoustic bat detectors at three naval stations in the Norfolk, VA area and on one installation in NJ. Detector set ups will operate through the fall to collect information on species composition, and activity levels across and entire warm season. Mr. Parrish is responsible for managing all incoming acoustic recordings and will be the lead data analyst as well as generating reports on survey results.

Wildlife Biologist, April 2015–Present
Nextera Energy, Acoustic Bat Monitoring, ND
As a wildlife biologist, Mr. Parrish conducted a pre-construction bat acoustic survey at a proposed large-scale wind power project in North Dakota. Mr. Parrish deployed five ground based acoustic detectors to determine the presence/absence of the Federally Threatened northern long-eared bat. In addition, acoustic data was used to determine the species composition and level of temporal activity of bats during the entire warm season in 2015.

Wildlife Biologist, March 2014–February 2015
Eoilan Renewable Energy, Eagle use and nest surveys, ME
Mr. Parrish carried out independent, bi-monthly eagle and raptor surveys for a potential small scale wind project in Downeast Maine. In addition to use surveys, Mr. Parrish conducted spring bald eagle nest surveys as a passenger in a small, fixed-wing aircraft in the greater project area to determine the number of resident eagles and assess potential risk of a wind facility.

Wildlife Biologist, August 2014–February 2015
Massachusetts Army National Guard (Camp Edwards), Acoustic Bat Monitoring, MA
Due to the proposed listing of northern long-eared bat as endangered under the Endangered Species Act (ESA) by the United States Fish and Wildlife Service (USFWS) and the documented declines of bats from white-nosed syndrome, there is growing concern regarding negative impacts on this increasingly vulnerable species. Mr. Parrish was part of a project to collect information on the species richness, activity levels, and spatio-temporal use patterns of bats (Microchiroptera) during the late-summer and fall period. Passive acoustic bat monitors were used to record calls which were then analyzed by Mr. Parrish using two software programs. Mr. Parrish then conducted statistical analysis examining spatial and temporal relationships and presented results in a final report.

Wildlife Biologist, August 2014–February 2015
Nextera Energy, Acoustic Bat Monitoring, SD
As a wildlife biologist, Mr. Parrish conducted a pre-construction bat acoustic survey at a proposed large-scale wind power project in South Dakota. The objective of this project was to determine the presence or absence of the Federally Threatened Northern Long-eared bat and Mr. Parrish deployed acoustic monitors throughout project area within suitable habitats and preformed a habitat assessment for potential occurrence of bat species using 2013 USFWS Indiana Bat survey guidelines. Prepared reports on habitat suitability for bat species within project area, analyzed all acoustic data, and presented results in a report of the results from acoustic monitoring during the fall migration period in 2014.

Wildlife Biologist, April 2014–February 2015
Nextera Energy, Acoustic Bat Monitoring, ND
As a wildlife biologist, Mr. Parrish conducted a pre-construction bat acoustic survey at a proposed large-scale wind power project in North Dakota. Mr. Parrish deployed three ground based acoustic detectors and two detectors in meteorological towers to determine the species composition and level of temporal activity of bats during the entire warm season in 2014. Mr. Parrish used two software programs to analyze acoustic data and then summarized results for reporting.

Wildlife Biologist, November–January 2015
BH2M Civil Engineering, New England Cottontail survey, ME
To determine the presence or absence of the New England Cottontail (a candidate species to be included on the Federal ESA and Endangered Species in Maine), Mr. Parrish is conducted a remote camera survey in plot adjacent to a suburban area in Maine.

Experience Summary

Mr. Hengstenberg is a Certified Wildlife Biologist with 18 years of experience in wildlife biology, wind energy ecology, natural resource assessment, aero-ecology studies, tropical field studies, and project management. Mr. Hengstenberg has extensive knowledge of wildlife studies and is well versed in scientific techniques and equipment including bat acoustic surveys, raptor migration studies, breeding bird surveys, avian radar ornithology, threatened & endangered species surveys, seabird & shorebird surveys, grassland bird surveys, tropical flora and fauna, and mist-netting of birds and bats. Mr. Hengstenberg has worked on natural resources projects across the country and throughout Latin America.

Mr. Hengstenberg has extensive range of field experience throughout New England, the Mid-Atlantic, the Northwest, the Southwest, Puerto Rico, and Mexico. Mr. Hengstenberg is a proficient technical writer and has extensive knowledge of various word processing, presentation, and statistical analysis applications. Mr. Hengstenberg is also experienced with endangered species and has worked closely with both state and federal agencies during the permitting process of wind energy and natural resource projects.

Education

MS, Wildlife & Fisheries Science, Mississippi State University, 2003
BS, Interdisciplinary Studies/Wilderness Research Administration, Plymouth State University, 1998

Registrations/Certifications

Certified Wildlife Biologist- The Wildlife Society; 2011

Training

Bat Acoustic Data Management; 2015
CPR and First Aid Certification; 2015
Airport Wildlife Hazard Management Workshop; 2010
OSHA HAZWOPER Certification and Refresher; 2008
Basic and Advanced Erosion & Sediment Control Course; 2008
Red Card Certification (Wildland Firefighter); 1997

Corporation Project Experience

Lead Project Biologist- July 2014 to Present
Northern Long-Eared Bat Surveys at multiple United States Department of the Navy Installations – Naval Facilities Engineering Command, Mid-Atlantic
Managing and providing field support for completion of presence/absence surveys for northern long-eared bat (*Myotis septentrionalis*) at multiple Naval installations located along the east coast of the United States. Field surveys include bat acoustic and mist netting surveys in accordance with federal protocols established by the United States Fish and Wildlife Service (USFWS) and detailed in USFWS' 2015 Northern Long-Eared Bat Interim Conference and Planning Guidance and USFWS' 2015 Range-Wide Indiana Bat Summer Survey Guidelines. Information collected will be used by natural resources managers to make informed decisions at the eight Installations where these surveys are being conducted to avoid negative impacts to this vulnerable species from Naval activities. Tetra Tech has teamed with Biodiversity Research Institute to complete the field work and data analysis.

Lead Project Biologist – May 2015 – Present
State of Maine Department of Transportation (MaineDOT), Two Stand-Alone State-Wide Multi-PIN Project Contracts: Natural Resources and Underwater Sound Monitoring, Maine
Wildlife biologist for Endangered Species Act (ESA) Biological Assessments, consultation, and conferencing support for northern long-eared bat and bat habitat assessment and presence/absence acoustic monitoring. Recent listing of northern long-eared bat has increased the focus on evaluating potential impacts of MaineDOT projects on the species through habitat assessments and presence/absence surveys in accordance with recommended guidance from USFWS: the Northern Long-Eared Bat Interim Conference and Planning Guidance: USFWS Regions 2, 3, 4, 5 & 6 (NLEB Guidance) and the 2015 Range-Wide Indiana Bat Summer Survey Guidelines (Indiana Bat Guidelines).

Lead Project Biologist, May 2015 – Present
Northern Long-Eared Bat Support Services for the State of Massachusetts Department of Transportation (MassDOT), Massachusetts
Wildlife biologist for all northern long-eared bat support services for MassDOT, performing a variety of tasks related to the understanding the potential impacts to the species following its listing under the ESA. Projects are expected to include habitat assessments and presence/absence surveys in accordance with recommended guidance from USFWS: NLEB Guidance and the Indiana Bat Guidelines.

Lead Project Biologist- January 2009 to Present
Spruce Mountain Wind Project, Maine – Patriot Renewables.
Managed and conducted pre-construction and post-construction survey including a bird and bat mortality surveys, avian radar survey, bat acoustic survey, raptor migration survey, migrant stopover survey, RTE species survey, and breeding bird survey as part of the permitting process. Developed and negotiated pre and post-construction monitoring plans with state and federal agencies, authored proposals, designed field studies, and prepared reports and memos. Provided the client advice on erosion and sediment control measures at the newly constructed site so that they comply with permit conditions.

Lead Project Biologist- January 2009 to Present
Saddleback Ridge Wind Project, Maine – Patriot Renewables.
Managed and conducted pre-construction avian surveys including a spring and fall avian radar survey, bat acoustic survey, raptor migration survey, migrant stopover survey, RTE species survey, and breeding bird survey as part of the permitting process. Developed and negotiated pre and post-construction monitoring plans, bird and bat conservation strategy plans with state and federal agencies, authored proposals, designed field studies, and prepared reports and memos.

Lead Project Biologist- January 2010 to 2012
Canton Mountain Wind Project, Maine – Patriot Renewables.
Managed and conducted pre-construction avian surveys including a spring and fall avian radar survey, bat acoustic survey, raptor migration survey, eagle aerial survey, migrant stopover survey, RTE species survey, and breeding bird survey as part of the permitting process. Developed and negotiated pre and post-construction monitoring plans with state and federal agencies, authored proposals, designed field studies, and prepared reports and memos.

Experience Summary

Ms. Craven has over four years of experience as a wildlife biologist conducting natural resource projects in Colorado, Wyoming, and the Northeast. She has a broad background in environmental science and wildlife biology. Her responsibilities have been distributed over a wide variety of wildlife species including endangered and invasive species. She has particular emphasis in mammals and more specifically in bat biology. She has extensive knowledge of bat acoustic monitoring, data management, and data analysis. Ms. Craven has been involved with acoustic bat monitoring projects throughout the country and is an experienced field biologist having played a lead role in organizing and conducting the NABat Program for the state of Maine, an acoustic bat monitoring program across the state. Most recently she has provided data analysis, according to U.S. Fish and Wildlife Service policy and protocols, for Navy facilities across the Northeast and commercial energy facilities in the Midwest and incorporated the data into summary reports.

Education

MS, Biology, University of Northern Colorado, 2013
BS, Environmental Science, Colorado College, 2007

Training

Bat Acoustic Data Management Workshop, Bat Conservation and Management, Harrisburg, Pennsylvania
Cultural and Natural Resource Management, Sibley Group, Olympia, Washington
NEPA Process and Endangered Species Act, Sibley Group, Olympia, Washington
Wildland Fire Training S-103/ S-109/L-180, National Wildlife Coordinating Group, Wyoming
40-Hour OSHA Hazardous Waste Health and Safety Training, OSHA, Denver, Colorado
Wilderness First Responder, Colorado Springs, CO
Wilderness First Aid and CPR, Portland, ME

Corporation Project Experience

Wildlife Biologist, United States Navy Facilities, Bat Acoustic Detector Deployment, Data Survey Analysis and Reporting, Various Installations, Eastern U.S.
Deployed Wildlife Acoustic SM3 acoustic detectors and acoustically surveyed Installations according to USFWS 2016 Indiana Bat Summer Survey Analysis Guidelines. Analyzed data for both baseline surveys and presence absence surveys for the federally threatened northern long-eared bat. Analyzed bat calls using Kaleidoscope Pro and manually vetted species of interest and spot checked for accuracy with Sonobat 3.3.2. Summarized mist-netting survey data, emergence counts, and interpreted northern long-eared bat radio-tracking results. Compiled data into summary reports.

Wildlife Biologist, United States Navy Facilities, Bat Mist-netting, Radio Tracking, and Roost Emergence Surveys, Various Installations, Virginia
Mist-netted, radio tracked, and conducted roost emergence counts according to USFWS 2016 Indiana Bat Summer Survey Analysis Guidelines. Experience handling the federally threatened northern long-eared bat and various northeastern bat species.

Wildlife Biologist, United States Fish and Wildlife Service, Wildlife Refuge System, Bat Acoustic Monitoring Analysis, Various refuges, Eastern U.S.
Analyzed bat acoustic data with Sonobat 3.2.2 and manually vetted Myotis spp. calls. Summarized data.

Wildlife Biologist, United States Navy Facilities, Fatality Surveys, Searcher Efficiency Trials, and Bat Detector Deployment, Cutler, Maine
Conducted fatality survey sweeps of plots preparing for fatality surveys. Conducted three searcher efficiency trials during fatality surveys. Deployed five Wildlife Acoustic SM3 bat acoustic detectors, checked detectors bi-weekly, downloaded and managed data, and repaired any detector system issues.

Wildlife Biologist, NextEra and Capital Power, Bat Detector Deployment, Various Commercial Wind Energy Projects, North Dakota
Deployed Wildlife Acoustics SM3 detectors at three commercial wind energy projects.

Wildlife Biologist, Sempra, Bat Data Analysis and Interim Reports, Broken Bow II, Nebraska
Analyzed bat acoustic data with Kaleidoscope Pro and Manually vetted Myotis spp. calls. Summarized data for report. Determined species from photos of bat fatalities.

Wildlife Biologist, Kinder Morgan, Ecological Assessment of Bats, Birds, and Small Mammals, Bearfort Mountain Natural Area, New Jersey
Analyzed bat calls from four detectors recording from May – Oct using Kaleidoscope Pro and manually vetting species of interest and spot checking for accuracy with Sonobat 3.3.2. Wrote report on findings. Conducted fall small mammal surveys with Sherman traps and edited small mammal report. Co-wrote report on avian surveys including point counts, raptor migration, and nocturnal predator surveys.

Wildlife Biologist, Bat Acoustic Data Analysis, Na Pua Makani Wind Project, Hawaii
Analyzed data using Kaleidoscope Pro and manually vetted unclassified calls in Sonobat 4.0.6 for presence of the federally endangered species, Hawaiian hoary bat. Summarized results and created figures for report.

Wildlife Biologist, Maine Department Of Transportation, Bat Acoustic Data Survey Reporting, Various Projects, Maine
Responded to comments on six bat acoustic data survey reports including creating screen shots of representative MYSE calls for the report in Sonobat 3.3.2. Converted data from full spectrum to zero-crossing.

Wildlife Biologist, NextEra, Northern Long-eared Bat Habitat Assessment Reporting, Crowned Ridge, South Dakota
Wrote report assessing the likelihood of northern long-eared bat presence in the area chosen for a pipeline and the suitability of habitat to be removed for the federally threatened northern long-eared bat and compiled photo-log.

Relevant Previous Experience

Master's Student, University of Northern Colorado, Research and Thesis, Colorado
Designed and implemented research over three field seasons on habitat use by bats in forested, edge, and masticated Ponderosa pine forest in Boulder County, Colorado. Used mist nets to capture bats for determination of species, weight, sex, age, and reproductive status. Used Pettersson D240x for acoustic recording and determined call to species with Sonobat 3.0 and manual vetting. Insect sampling with black light traps and keying to order.

Contracted Wildlife Biologist, Maine Inland Fisheries and Wildlife, NA Bat Program, Maine
Provided planning assistance for NA Bat monitoring program for the state of Maine. Planned road driving transects, assisted volunteers with stationary detector placement, and acquiring land owner permission. Processed, analyzed, and managed incoming data using Kaleidoscope Pro software. Gained experience with both full spectrum and zero crossing detectors including Anabat, EM3+, and SM2+ detectors.

APPENDIX B
COMPLETED PHASE 1 SUMMER HABITAT ASSESSMENT FORMS

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NLEB
~~INDIANA~~ BAT HABITAT ASSESSMENT DATASHEET

Project Name: KILLINGLY ENERGY CENTER (KEC) Date: 6/2/2016

Township/Range/Section:

Lat Long/~~UTM~~ Zone: MT 2557854 4638938 Surveyor: C. PARRISH

CTKY-1

Brief Project Description

AN APPROX. 550-MW electric generating Facility & switchyard to be located ON ~ 72 acres OF LAND OFF OF LAKE ROAD IN THE TOWN OF KILLINGLY, CT

Project Area

	Total Acres	Forest Acres	Open Acres
Project	~72	~70	~2

Proposed Tree Removal (ac) *EXACT AMOUNT UNKNOW	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
	~50%	NA	NA

Vegetation Cover Types

Pre-Project	Post-Project
FORESTED WETLAND	- FORESTED - WETLAND - COMMERICAL / INDUSTRIAL USE - PARKING AREAS, ROADWAYS

Landscape within 5 mile radius

Flight corridors to other forested areas?

YES, ABUNDANT FORESTED AREAS IN THIS PART OF NORTH EASTERN, CT

Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

FORESTED LAND, QUINEBAUG RIVER (RIPARIAN AREA) POWERLINE CORRIDOR, COMMERIAL DEVELOPMENT
NUMEROUS PONDS IN THE AREA, ,

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Mashamoquet BROOK STATE PARK (CT) ~3mi
NATCHAUG STATE FOREST (CT) ~7mi

APPENDIX A
PHASE 1 SUMMER HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description

Sample Site No.(s): CTKY-1

SITUATED ON CANOPY RIDING POTENTIAL FLIGHT PATH BETWEEN ROCKY RIDGE & RED MAPLE WETLAND/SEEP

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial
			X
Pools/Ponds (# and size)	650m / 3.5ac	Open and accessible to bats? Y	
Wetlands (approx. ac.)	Permanent	Seasonal	

Describe existing condition of water sources:
- NEAREST PERENNIAL STREAM ~ 250m to NW (QUINEBAUG RIVER)
- BRUCE PONDS (2) ~ 2.5 ac 700m TO WEST
- ALEXANDER LAKE ~ 140 ac 900m TO SE

Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')
	5/90%	2/15%	1/5%

1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%

Dominant Species of Mature Trees	RED OAK, GRAY BIRCH, WHITE PINE, HEMLOCK, HICKORY			
% Trees w/ Exfoliating Bark	1%			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	3 40%	3/35%	3/25%	
No. of Suitable Snags		1		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable

IS THE HABITAT SUITABLE FOR ~~INDIANA~~ NLEB BATS? YES

Additional Comments:

NICE, POTENTIAL FLY WAY THAT LEADS TO EXCELLENT FLYWAY/CANOPY GAP JUST OUTSIDE OF PROJECT AREA.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy, examples of potential suitable snags and live trees, water sources

PHOTOS OF ~~SITE~~ STATION, WETLAND, ROCKY RIDGE, SNAG & SHAGBARK HICKORY

APPENDIX A
PHASE 1 SUMMER HABITAT ASSESSMENTS

NLEB ~~INDIANA~~ BAT HABITAT ASSESSMENT DATASHEET

Project Name: KILLINGLY ENERGY CENTER (KEC) Date: 6/10/2016

Township/Range/Section:

Lat Long/UTM/Zone: 19T 0257888 4638579 Surveyor: C. PARRISH

Brief Project Description CTKY-7

AN APPROX. 550-MW electric generating Facility & switchyard to be located ON ~ 72 acres OF LAND OFF OF LAKE ROAD IN THE TOWN OF KILLINGLY, CT

Project Area

	Total Acres	Forest Acres	Open Acres
Project	~72	~70	~2

	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
Proposed Tree Removal (ac) *EXACT AMOUNT UNKNOWN	~50%	NA	NA

Vegetation Cover Types

Pre-Project	Post-Project
FORESTED WETLAND	- FORESTED - WETLAND - COMMERICAL / INDUSTRIAL USE - PARKING AREAS, ROADWAYS

Landscape within 5 mile radius

Flight corridors to other forested areas?

YES, ABUNDANT FORESTED AREAS IN THIS PART OF NORTH EASTERN, CT

Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

FORESTED LAND, QUINEBAUG RIVER (RIPARIAN AREA) POWERLINE CORRIDOR, COMMERIAL DEVELOPMENT NUMEROUS PONDS IN THE AREA, I

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Mashamoquet Brook STATE PARK (CT) ~3mi
NATCHAUG STATE FOREST (CT) ~7mi

APPENDIX A
PHASE I SUMMER HABITAT ASSESSMENTS

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description

Sample Site No (s): CTRY-2

MATURE, MIXED FOREST DOMINATED BY WHITE PINE. ADJACENT TO A SLIGHT OAK RIDGE W/ OPEN MID & UNDERSTORY

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial X	Describe existing condition of water sources – SMALL POND 3.5 ac to NE ~600m – BEAVER PONDS (2) ~2.5 ac 700m to WEST – QUINEBAUG RIVER ~350m to NW – ALEXANDER LAKE ~1400 ac 780m to SE
Pools/Ponds (# and size) 3		Open and accessible to bats? Y		
Wetlands (approx. ac.) 0.06 ac	Permanent X	Seasonal		

Forest Resources at Sample Site

	Canopy (> 50')	Midstory (20-50')	Understory (<20')
Closure/Density	6 / 90%	3 / 30%	0 %
Dominant Species of Mature Trees	WHITE PINE, RED OAK, RED MAPLE		
% Trees w/ Exfoliating Bark	0%	0%	0%
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)
	5%	10%	85%
No. of Suitable Snags		2	

1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable – 2 SNAGS IMMEDIATELY ADJACENT TO DECIDUOUS MAKE CAVITIES

IS THE HABITAT SUITABLE FOR ~~INDIANA~~ NLEB BATS? YES

Additional Comments: AMPLE FORAGING PATHS W/N THIS MATURE STAND & HIGH CANOPY (~70')
AVIAN SP. ARE CHARACTERISTIC OF MATURE FOREST (PIWA, EWPE, BVEN, BRCR)
OLD FIELD SITE (STONE WALL, DOMINATED BY PINE)
ADJACENT TO SLIGHT RIDGE; FORAGING SIDEHILL FOR NLEB

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy, examples of potential suitable snags and live trees; water sources

MULTIPLE PHOTOS OF SITE ATTACHED W/ COMMENTS

APPENDIX C
SITE CONDITIONS AND DETECTOR ORIENTATION PHOTOGRAPHS

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Photo #: CTKY-1_1

Comments: View to the southwest through a potential, within canopy flight path. The west is flanked by a rocky outcropping near the top of a slight ridge. To the east is a stand of mature white pine and hemlock that borders a swamping area dominated by ferns, sphagnum and red maple.

Photo #: CTKY-1_2

Comments: View to the north through a potential within canopy flight path. This path leads to a grassy corridor approximately 100 m to the north.

Photo #: CTKY-1_3

Comments: View to the west of detector station (right side of frame) and rocky outcropping.

Photo #: CTKY-1_4

Comments: Red maple “swamp” approximately 50 m east of station.

Photo #: CTKY-2_1

Comments: View to the north of closed canopy, two-track road approximately 70 m west of station on the project area boundary.

Photo #: CTKY-2_2

Comments: View to the east towards station. Station is not visible but is located near the center of the frame approximately 70 m from photo location.

Photo #: CTKY-2_3

Comments: View to the east of habitat adjacent to station. Mixed, mature forest. Avian species observed at this station are typical found in mature forests (e.g., brown creeper, eastern wood peewee).

Photo #: CTKY-2_4

Comments: Station overview. View to the northeast.

Photo #: CTKY-2_5

Comments: Potential, within-canopy flight path.

Photo #: CTKY-2_6
Comments: Old maple snag with crevices. There were also several mature white pine snags in the vicinity of the station with bark shedding.

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APPENDIX D
DETAILED WEATHER CONDITIONS

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Date	Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Precip.	Conditions
6/2/2016	6:52 PM	75.0 °F	55.9 °F	51%	30.09 in	10.0 mi	South	8.1 mph	N/A	Clear
	7:52 PM	70.0 °F	57.0 °F	63%	30.09 in	10.0 mi	South	8.1 mph	N/A	Clear
	8:52 PM	66.0 °F	55.9 °F	70%	30.10 in	10.0 mi	SSE	6.9 mph	N/A	Clear
	9:38 PM	63.0 °F	55.0 °F	75%	30.13 in	10.0 mi	Variable	4.6 mph	N/A	Mostly Cloudy
	9:52 PM	62.1 °F	55.0 °F	78%	30.13 in	10.0 mi	Variable	3.5 mph	N/A	Overcast
	10:52 PM	62.1 °F	54.0 °F	75%	30.13 in	10.0 mi	SSE	5.8 mph	N/A	Overcast
	11:52 PM	62.1 °F	54.0 °F	75%	30.13 in	10.0 mi	SE	3.5 mph	N/A	Overcast
	12:52 AM	61.0 °F	55.0 °F	81%	30.12 in	10.0 mi	SSE	3.5 mph	N/A	Overcast
	1:52 AM	62.1 °F	55.0 °F	78%	30.10 in	10.0 mi	SE	3.5 mph	N/A	Overcast
	2:52 AM	62.1 °F	55.0 °F	78%	30.09 in	10.0 mi	Calm	Calm	N/A	Overcast
	3:52 AM	62.1 °F	55.0 °F	78%	30.08 in	10.0 mi	Calm	Calm	N/A	Overcast
	4:52 AM	62.1 °F	55.0 °F	78%	30.08 in	10.0 mi	South	4.6 mph	N/A	Overcast
	5:52 AM	62.1 °F	55.0 °F	78%	30.08 in	10.0 mi	SSW	3.5 mph	N/A	Overcast
6/3/2016	6:52 PM	70.0 °F	61.0 °F	73%	30.01 in	10.0 mi	South	5.8 mph	N/A	Mostly Cloudy
	7:52 PM	69.1 °F	61.0 °F	75%	30.01 in	10.0 mi	South	4.6 mph	N/A	Mostly Cloudy
	8:48 PM	68.0 °F	60.8 °F	78%	30.02 in	10.0 mi	SW	5.8 mph	N/A	Overcast
	8:52 PM	68.0 °F	61.0 °F	78%	30.02 in	10.0 mi	SW	5.8 mph	N/A	Overcast
	9:20 PM	68.0 °F	61.0 °F	78%	30.03 in	10.0 mi	SSW	5.8 mph	N/A	Overcast
	9:52 PM	68.0 °F	61.0 °F	78%	30.04 in	10.0 mi	SSW	3.5 mph	N/A	Overcast
	10:52 PM	66.9 °F	61.0 °F	81%	30.03 in	10.0 mi	SSW	6.9 mph	N/A	Overcast
	11:48 PM	66.2 °F	60.8 °F	83%	30.03 in	9.0 mi	SW	3.5 mph	N/A	Overcast
	11:52 PM	66.0 °F	61.0 °F	84%	30.03 in	8.0 mi	SW	6.9 mph	N/A	Overcast
	12:52 AM	66.0 °F	61.0 °F	84%	30.03 in	6.0 mi	SW	3.5 mph	N/A	Haze
	1:52 AM	66.0 °F	61.0 °F	84%	30.01 in	5.0 mi	Calm	Calm	N/A	Haze

Date	Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Precip.	Conditions
	2:52 AM	66.0 °F	62.1 °F	87%	30.01 in	5.0 mi	Calm	Calm	N/A	Overcast
	3:52 AM	66.0 °F	62.1 °F	87%	30.00 in	4.0 mi	Calm	Calm	N/A	Overcast
	4:39 AM	66.0 °F	62.1 °F	87%	29.99 in	4.0 mi	Calm	Calm	N/A	Mostly Cloudy
	4:48 AM	66.2 °F	62.6 °F	88%	29.99 in	4.0 mi	Calm	Calm	N/A	Scattered Clouds
	4:52 AM	66.0 °F	62.1 °F	87%	29.99 in	4.0 mi	Calm	Calm	N/A	Scattered Clouds
	5:20 AM	64.9 °F	61.0 °F	87%	30.00 in	2.5 mi	Calm	Calm	N/A	Scattered Clouds
	5:23 AM	64.9 °F	61.0 °F	87%	30.00 in	2.5 mi	Calm	Calm	N/A	Mostly Cloudy
	5:38 AM	64.0 °F	61.0 °F	90%	30.00 in	1.8 mi	Calm	Calm	N/A	Mostly Cloudy
	5:47 AM	64.4 °F	60.8 °F	88%	30.00 in	2.0 mi	Calm	Calm	N/A	Overcast
	5:52 AM	64.9 °F	61.0 °F	87%	30.00 in	2.0 mi	Calm	Calm	N/A	Overcast
	6:04 AM	66.0 °F	62.1 °F	87%	30.00 in	2.5 mi	Calm	Calm	N/A	Overcast
6/4/2016	7:52 PM	79.0 °F	61.0 °F	54%	29.92 in	10.0 mi	SSW	4.6 mph	N/A	Clear
	8:52 PM	75.9 °F	61.0 °F	60%	29.93 in	10.0 mi	South	4.6 mph	N/A	Clear
	9:52 PM	73.0 °F	63.0 °F	71%	29.95 in	10.0 mi	SSE	4.6 mph	N/A	Clear
	10:52 PM	69.1 °F	63.0 °F	81%	29.96 in	10.0 mi	Calm	Calm	N/A	Clear
	11:52 PM	68.0 °F	62.1 °F	81%	29.96 in	10.0 mi	SSE	4.6 mph	N/A	Scattered Clouds
	11:59 PM	66.9 °F	62.1 °F	84%	29.96 in	9.0 mi	SSE	3.5 mph	N/A	Mostly Cloudy
	12:52 AM	66.9 °F	62.1 °F	84%	29.95 in	6.0 mi	SE	3.5 mph	N/A	Haze
	1:52 AM	66.0 °F	62.1 °F	87%	29.93 in	5.0 mi	SE	4.6 mph	N/A	Overcast
	2:05 AM	66.0 °F	62.1 °F	87%	29.93 in	4.0 mi	SE	3.5 mph	N/A	Overcast
	2:41 AM	64.9 °F	62.1 °F	90%	29.93 in	2.0 mi	SSE	4.6 mph	N/A	Overcast

Date	Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Precip.	Conditions
	2:48 AM	64.4 °F	62.6 °F	94%	29.93 in	1.8 mi	SSE	3.5 mph	N/A	Overcast
	2:52 AM	64.9 °F	62.1 °F	90%	29.92 in	2.0 mi	Variable	3.5 mph	N/A	Overcast
	3:05 AM	64.9 °F	62.1 °F	90%	29.93 in	1.5 mi	SSE	3.5 mph	N/A	Overcast
	3:47 AM	64.4 °F	62.6 °F	94%	29.92 in	2.5 mi	South	4.6 mph	N/A	Overcast
	3:52 AM	64.9 °F	62.1 °F	90%	29.91 in	2.5 mi	SSE	4.6 mph	N/A	Overcast
	4:07 AM	64.0 °F	61.0 °F	90%	29.92 in	1.8 mi	SSE	4.6 mph	N/A	Overcast
	4:17 AM	64.0 °F	61.0 °F	90%	29.92 in	2.0 mi	South	4.6 mph	N/A	Overcast
	4:36 AM	64.0 °F	61.0 °F	90%	29.92 in	1.5 mi	South	3.5 mph	N/A	Overcast
	4:52 AM	64.0 °F	62.1 °F	93%	29.92 in	2.0 mi	Variable	3.5 mph	N/A	Overcast
	5:06 AM	64.0 °F	61.0 °F	90%	29.92 in	3.0 mi	South	4.6 mph	N/A	Overcast
	5:52 AM	64.0 °F	61.0 °F	90%	29.91 in	4.0 mi	Calm	Calm	0.01 in	Light Rain
6/5/2016	7:19 PM	66.9 °F	64.0 °F	90%	29.65 in	2.5 mi	South	9.2 mph	0.00 in	Light Rain
	7:28 PM	66.9 °F	64.0 °F	90%	29.64 in	3.0 mi	SSE	9.2 mph	0.00 in	Overcast
	7:52 PM	68.0 °F	64.9 °F	90%	29.64 in	4.0 mi	South	10.4 mph	0.00 in	Overcast
	8:38 PM	68.0 °F	64.9 °F	90%	29.64 in	2.5 mi	WSW	4.6 mph	0.10 in	Heavy Rain
	8:41 PM	68.0 °F	64.9 °F	90%	29.64 in	1.8 mi	West	3.5 mph	0.15 in	Heavy Rain
	8:52 PM	68.0 °F	64.9 °F	90%	29.65 in	2.0 mi	NNW	10.4 mph	0.22 in	Heavy Rain
	8:58 PM	68.0 °F	64.0 °F	87%	29.64 in	3.0 mi	NNE	8.1 mph	0.03 in	Heavy Rain
	9:09 PM	66.9 °F	63.0 °F	87%	29.60 in	9.0 mi	SE	6.9 mph	0.04 in	Light Rain
	9:39 PM	66.9 °F	64.0 °F	90%	29.62 in	10.0 mi	South	4.6 mph	0.04 in	Light Rain
	9:52 PM	68.0 °F	64.0 °F	87%	29.63 in	10.0 mi	Calm	Calm	0.04 in	Overcast
	10:05 PM	68.0 °F	64.9 °F	90%	29.63 in	10.0 mi	WSW	3.5 mph	N/A	Overcast
	10:32 PM	69.1 °F	64.9 °F	87%	29.62 in	10.0 mi	SSW	4.6 mph	N/A	Overcast
	10:52 PM	68.0 °F	64.0 °F	87%	29.60 in	10.0 mi	SW	3.5 mph	N/A	Overcast
	11:52 PM	68.0 °F	64.0 °F	87%	29.61 in	10.0 mi	WSW	4.6 mph	N/A	Overcast

Date	Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Precip.	Conditions
	12:52 AM	68.0 °F	64.0 °F	87%	29.61 in	10.0 mi	WSW	3.5 mph	N/A	Overcast
	1:52 AM	68.0 °F	64.0 °F	87%	29.61 in	10.0 mi	SW	5.8 mph	N/A	Overcast
	2:52 AM	66.9 °F	63.0 °F	87%	29.62 in	10.0 mi	SSW	6.9 mph	N/A	Overcast
	3:20 AM	66.0 °F	63.0 °F	90%	29.62 in	10.0 mi	SW	3.5 mph	N/A	Scattered Clouds
	3:52 AM	64.9 °F	62.1 °F	90%	29.62 in	10.0 mi	Calm	Calm	N/A	Clear
	4:52 AM	64.9 °F	61.0 °F	87%	29.61 in	10.0 mi	SSW	5.8 mph	N/A	Partly Cloudy
	5:52 AM	64.9 °F	61.0 °F	87%	29.61 in	10.0 mi	Calm	Calm	N/A	Clear
	6:52 PM	81.0 °F	55.0 °F	41%	29.61 in	10.0 mi	SW	8.1 mph	N/A	Clear
	7:52 PM	78.1 °F	59.0 °F	52%	29.63 in	10.0 mi	South	9.2 mph	N/A	Clear
	8:52 PM	73.9 °F	59.0 °F	59%	29.64 in	10.0 mi	SSW	6.9 mph	N/A	Clear
	9:52 PM	73.0 °F	59.0 °F	61%	29.65 in	10.0 mi	SSW	8.1 mph	N/A	Clear
	10:52 PM	69.1 °F	60.1 °F	73%	29.65 in	10.0 mi	Calm	Calm	N/A	Clear
	11:52 PM	68.0 °F	59.0 °F	73%	29.64 in	10.0 mi	Calm	Calm	N/A	Clear
6/6/2016	12:52 AM	64.9 °F	59.0 °F	81%	29.63 in	10.0 mi	Calm	Calm	N/A	Clear
	1:52 AM	64.9 °F	60.1 °F	84%	29.62 in	10.0 mi	Calm	Calm	N/A	Scattered Clouds
	2:52 AM	64.0 °F	59.0 °F	84%	29.61 in	10.0 mi	NE	3.5 mph	N/A	Clear
	3:52 AM	63.0 °F	59.0 °F	87%	29.59 in	10.0 mi	Calm	Calm	N/A	Mostly Cloudy
	4:52 AM	63.0 °F	59.0 °F	87%	29.58 in	10.0 mi	Calm	Calm	N/A	Mostly Cloudy
	5:52 AM	63.0 °F	59.0 °F	87%	29.59 in	9.0 mi	Calm	Calm	N/A	Clear
6/7/2016	7:52 PM	75.0 °F	55.0 °F	50%	29.43 in	10.0 mi	NW	11.5 mph	N/A	Scattered Clouds
	8:03 PM	73.9 °F	53.1 °F	48%	29.46 in	10.0 mi	NNW	15.0 mph	N/A	Mostly Cloudy

Date	Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Precip.	Conditions
	8:52 PM	64.0 °F	57.9 °F	80%	29.46 in	10.0 mi	SSW	3.5 mph	0.04 in	Partly Cloudy
	9:52 PM	63.0 °F	57.9 °F	84%	29.48 in	10.0 mi	Calm	Calm	N/A	Clear
	10:52 PM	63.0 °F	55.0 °F	75%	29.49 in	10.0 mi	West	4.6 mph	N/A	Partly Cloudy
	11:52 PM	62.1 °F	54.0 °F	75%	29.49 in	10.0 mi	WNW	6.9 mph	N/A	Clear
	12:52 AM	61.0 °F	51.1 °F	70%	29.50 in	10.0 mi	WNW	6.9 mph	N/A	Clear
	1:52 AM	60.1 °F	50.0 °F	69%	29.50 in	10.0 mi	WNW	6.9 mph	N/A	Clear
	2:52 AM	60.1 °F	48.9 °F	67%	29.50 in	10.0 mi	WNW	8.1 mph	N/A	Clear
	3:52 AM	59.0 °F	48.9 °F	69%	29.51 in	10.0 mi	West	6.9 mph	N/A	Clear
	4:52 AM	57.0 °F	48.9 °F	74%	29.53 in	10.0 mi	Variable	3.5 mph	N/A	Clear
	5:52 AM	59.0 °F	48.9 °F	69%	29.55 in	10.0 mi	West	4.6 mph	N/A	Clear
6/8/2016	6:52 PM	64.9 °F	46.0 °F	50%	29.57 in	10.0 mi	NW	8.1 mph	N/A	Clear
	7:52 PM	63.0 °F	43.0 °F	48%	29.61 in	10.0 mi	WNW	17.3 mph	N/A	Mostly Cloudy
	8:52 PM	61.0 °F	41.0 °F	48%	29.64 in	10.0 mi	NW	12.7 mph	N/A	Clear
	9:52 PM	60.1 °F	39.9 °F	47%	29.67 in	10.0 mi	NW	11.5 mph	N/A	Clear
	10:52 PM	57.9 °F	39.0 °F	49%	29.68 in	10.0 mi	NW	9.2 mph	N/A	Clear
	11:52 PM	57.0 °F	39.0 °F	51%	29.68 in	10.0 mi	WNW	6.9 mph	N/A	Clear
	12:52 AM	55.9 °F	39.9 °F	55%	29.69 in	10.0 mi	WNW	12.7 mph	N/A	Clear
	1:52 AM	55.9 °F	39.9 °F	55%	29.69 in	10.0 mi	WNW	10.4 mph	N/A	Partly Cloudy
	2:52 AM	55.9 °F	41.0 °F	57%	29.70 in	10.0 mi	WNW	5.8 mph	N/A	Overcast
	3:52 AM	55.0 °F	41.0 °F	59%	29.70 in	10.0 mi	West	11.5 mph	N/A	Partly Cloudy
	4:52 AM	55.0 °F	41.0 °F	59%	29.70 in	10.0 mi	West	8.1 mph	N/A	Overcast
	5:52 AM	55.9 °F	41.0 °F	57%	29.71 in	10.0 mi	West	6.9 mph	N/A	Mostly Cloudy
6/9/2016	7:52 PM	63.0 °F	35.1 °F	35%	29.78 in	10.0 mi	WNW	10.4 mph	N/A	Clear
	8:52 PM	62.1 °F	36.0 °F	38%	29.81 in	10.0 mi	West	5.8 mph	N/A	Clear

Date	Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Precip.	Conditions
	9:52 PM	60.1 °F	36.0 °F	41%	29.82 in	10.0 mi	WNW	8.1 mph	N/A	Clear
	10:52 PM	59.0 °F	37.0 °F	44%	29.83 in	10.0 mi	WNW	5.8 mph	N/A	Clear
	11:52 PM	57.0 °F	37.0 °F	47%	29.84 in	10.0 mi	WSW	3.5 mph	N/A	Clear
	12:52 AM	55.0 °F	37.9 °F	53%	29.84 in	10.0 mi	WSW	4.6 mph	N/A	Clear
	1:52 AM	55.0 °F	37.9 °F	53%	29.84 in	10.0 mi	West	6.9 mph	N/A	Clear
	2:52 AM	54.0 °F	37.0 °F	53%	29.84 in	10.0 mi	WSW	6.9 mph	N/A	Clear
	3:52 AM	53.1 °F	37.9 °F	57%	29.85 in	10.0 mi	West	3.5 mph	N/A	Mostly Cloudy
	4:52 AM	53.1 °F	37.9 °F	57%	29.86 in	10.0 mi	West	5.8 mph	N/A	Scattered Clouds
	5:52 AM	54.0 °F	37.9 °F	55%	29.87 in	10.0 mi	West	6.9 mph	N/A	Mostly Cloudy

APPENDIX F-4 – AGENCY CORRESPONDENCE

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

March 8, 2016

Mr. George Logan
REMA Ecological Services, LLC
164 East Center Street, Suite 8
Manchester, CT 06040
Rema8@aol.com

Project: Preliminary Site Assessment for Property Located at 189 Lake Road in Killingly, Connecticut

NDDB Preliminary Assessment No.: 201601996

Dear Amy,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for the Preliminary Site Assessment for Property Located at 189 Lake Road in Killingly, Connecticut.

According to our records there are known extant populations of State Listed Species known that occur within or close to the boundaries of this property. I have attached a list of these species to this letter. Please be advised that this is a preliminary review and not a final determination. A more detailed review will be necessary to move forward with any subsequent environmental permit applications submitted to DEEP for the proposed project. This preliminary assessment letter cannot be used or submitted with your permit applications at DEEP. This letter is valid for one year.

To prevent impacts to State-listed species, field surveys of the site should be performed by a qualified biologist when these target species are identifiable. A report summarizing the results of such surveys should include:

1. Survey date(s) and duration
2. Site descriptions and photographs
3. List of component vascular plant and animal species within the survey area (including scientific binomials)
4. Data regarding population numbers and/or area occupied by State-listed species

5. Detailed maps of the area surveyed including the survey route and locations of State-listed species
6. Statement/résumé indicating the biologist's qualifications

The site surveys report should be sent to our CT DEEP-NDDB Program (deep.nddbrequest@ct.gov) for further review by our program biologists along with an updated request for another NDDB review.

If you do not intend to do site surveys to determine the presence or absence of state-listed species, please let us know how you will protect the state-listed species from being impacted by this project.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.
Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3

Species List for NDDB Request

Scientific Name	Common Name	State Status
Invertebrate Animal		
Acronicta fragilis	Fragile dagger moth	SC
Callophrys irus	Frosted elfin	T
Derrima stellata	Pink star moth	SC
Terrestrial Community - Other Classification		
Floodplain forest	<null>	<null>
Vertebrate Animal		
Glyptemys insculpta	Wood turtle	SC
Lasiurus borealis	Red bat	SC
Terrapene carolina carolina	Eastern box turtle	SC

E = Endangered, T = Threatened, SC = Special Concern, * Extirpated

Connecticut Department of
Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division

CPPU USE ONLY
App #:_____
Doc #:_____
Check #: No fee required
Program: Natural Diversity Database **Endangered Species**
Hardcopy _____ **Electronic** _____

Request for Natural Diversity Data Base (NDDB) State Listed Species Review

Please complete this form in accordance with the instructions (DEEP-INST-007) to ensure proper handling of your request.
There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening & Request Type

Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the DEEP website. These maps are updated twice a year, usually in June and December.

Does your site, including all affected areas, fall in an NDDB Area according to the map instructions:

☒ Yes ☐ No **Enter the date** of the map reviewed for pre-screening: **September 2015**

This form is being submitted for a :

☒ *New* NDDB request ☐ *Renewal/Extension* of an existing NDDB Request ☐ With modifications ☐ Without modifications*****	☐ *New* **Safe Harbor Determination** associated with an application for GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities ☐ *Renewal/Extension* of an existing Safe Harbor Determination ☐ With modifications ☐ Without modifications*****
*****no attachments required [*CPPU Use Only - NDDB-Listed Species Determination* # 1736]	*****no attachments required [*CPPU Use Only - NDDB-Safe Harbor Determination* # 1736]
Enter NDDB Determination Number for Renewal/Extension:	Enter Safe Harbor Determination Number for Renewal/Extension:

Part II: Requester Information

***If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated **exactly** as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD.* (www.concord-sots.ct.gov/CONCORD/index.jsp)

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the Request to Change company/Individual Information to the address indicated on the form.

1. Requester Name*: **REMA Ecological Services, LLC**

Address: **164 E. Center Street, Suite 8**

City/Town: **Manchester** State: **CT** Zip Code: **06040**

Business Phone: **860 649 7362** ext.

Contact Name: **George T. Logan, MS, PWS, CSE**

E-mail: **rema8@aol.com**

By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes

a) Requester can best be described as:

☐ Individual ☐ Federal Agency ☐ State agency ☐ Municipality ☐ Tribal

☒ *business entity (* if a business entity complete i through iii):

i) Check type ☐ corporation ☒ limited liability company ☐ limited partnership

☐ limited liability partnership ☐ statutory trust ☐ Other:

ii) Provide Secretary of the State Business ID #: 0539455 This information can be accessed at the Secretary of the State's database (CONCORD). (www.concord-sots.ct.gov/CONCORD/index.jsp)

iii) ☐ Check here if your business is **NOT** registered with the Secretary of State's office.

b) Acting as (Affiliation), pick one:

☐ Property owner ☒ Consultant ☐ Engineer ☐ Facility owner ☐ Applicant

☐ Biologist ☐ Pesticide Applicator ☐ Other representative:

2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company:

Contact Person: Title:

Mailing Address:

City/Town: State: Zip Code:

Business Phone: ext.

*E-mail:

*By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes.

Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

1. SITE NAME AND LOCATION

Site Name or Project Name: **189 Lake Road**

Town(s): **Killingly**

Street Address or Location Description:
189 Lake Road

Size in acres, or site dimensions: **~45.0**

Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):

Latitude: **41.8636** Longitude: **-71.9154**

Method of coordinate determination (check one):

☐ GPS ☐ Photo interpolation using CTECO map viewer ☒ Other (specify): **NWI Mapper**

2a. Describe the current land use and land cover of the site.

Mostly forested, including white pine dominated, pole-sized evergreen/deciduous, shrub/sapling thickets, open hayfield, forested wetlands, man-made pond, residential lawn.

b. Check all that apply and enter the size in acres or % of area in the space after each checked category.

☐ Industrial/Commercial _____	☐ Residential 0.5	☒ Forest 80
☒ Wetland 17	☐ Field/grassland 2.5	☐ Agricultural ____
☐ Water _____	☐ Utility Right-of-way _____	
☐ Transportation Right-of-way _____	☐ Other (specify): _____	

Part IV: Project Information

1. PROJECT TYPE:

Choose Project Type: Site assessment , If other describe: _____

2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? ☐ Yes ☒ No If yes, explain.

Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used.

   This request is for planning purposes only.

4. If this is a renewal or extension of an existing NDDB or Safe Harbor request *with* modifications, explain what about the project has changed.

5. Provide a contact for questions about the project details if different from Part II primary contact.

   Name:

   Phone:

   E-mail:

Part V: Request Requirements and Associated Application Types

Check *one* box from either Group 1, Group 2 *or* Group 3, indicating the appropriate category for this request.

Group 1. If you check one of these boxes, fill out Parts I – VII of this form and submit the required attachments A and B.

- ☐ Preliminary screening was negative but an NDDB review is still requested
- ☐ Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)
- ☒ Request regards a preliminary site assessment or project feasibility study
- ☐ Request relates to land acquisition or protection
- ☐ Request is associated with a *renewal* of an existing permit, with no modifications

Group 2. If you check one of these boxes, fill out Parts I – VII of this form and submit required attachments A, B, *and* C.

- ☐ Request is associated with a *new* state or federal permit application
- ☐ Request is associated with modification of an existing permit
- ☐ Request is associated with a permit enforcement action
- ☐ Request regards site management or planning, requiring detailed species recommendations
- ☐ Request regards a state funded project, state agency activity, or CEPA request

☐ **Group 3.** If you are requesting a **Safe Harbor Determination**, complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

If you are filing this request as part of a state or federal permit application(s) enter the application information below.

Permitting Agency and Application Name(s): _____

State DEEP Application Number(s), if known: _____

State DEEP Enforcement Action Number, if known: _____

State DEEP Permit Analyst(s)/Engineer(s), if known: _____

Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

☒ Attachment A:	**Overview Map:** an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
☒ Attachment B:	**Detailed Site Map:** fine scaled map showing site boundary details on aerial imagery with relevant landmarks labeled. (Site boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
☐ Attachment C:	**Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C)** ☐ Section i: Supplemental Site Information and supporting documents ☐ Section ii: Supplemental Project Information and supporting documents
☐ Attachment D:	**Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D)**

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."

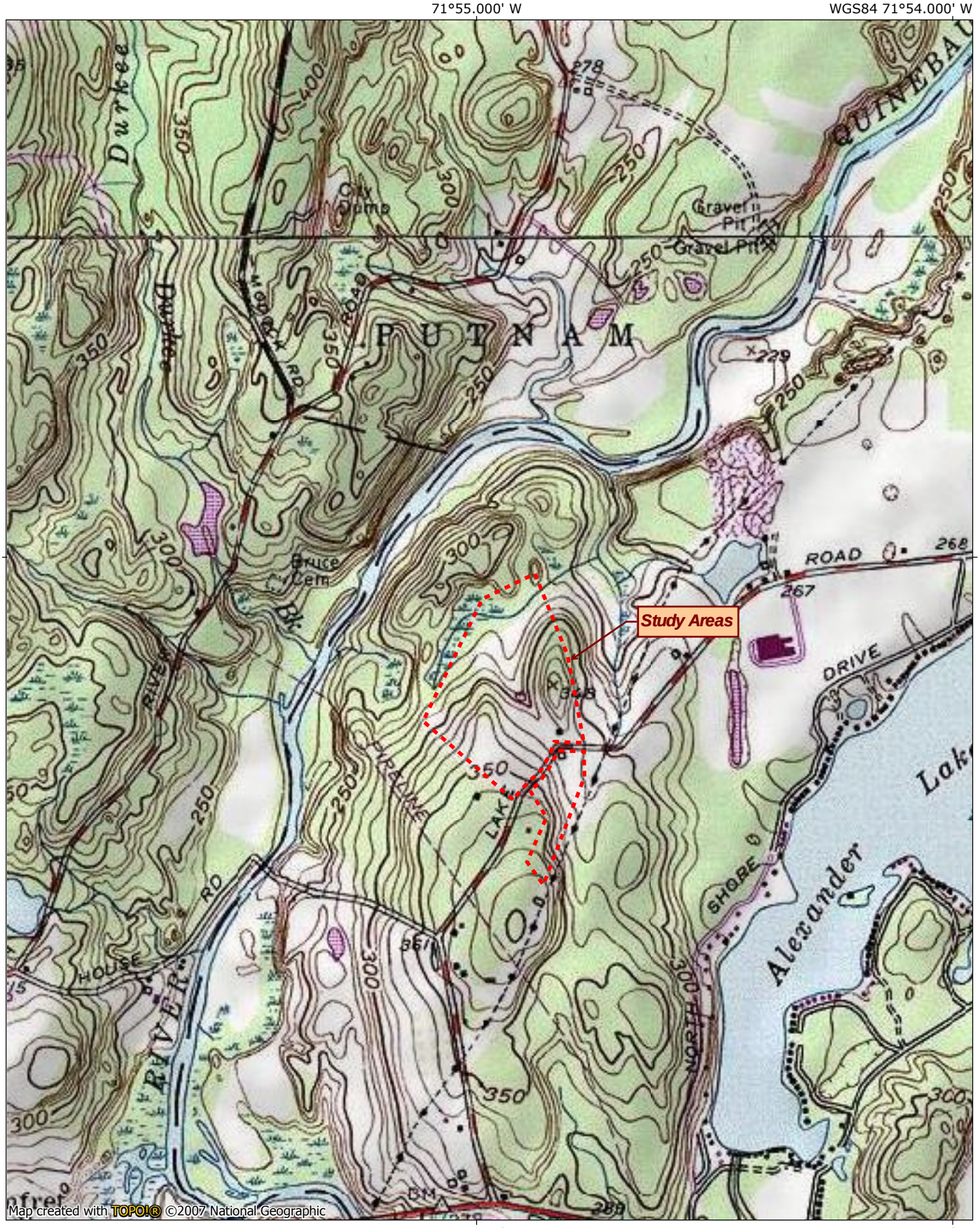
Signature of Requester (a typed name will substitute for a handwritten signature)	**2/9/16** Date
George T. Logan, MS, PWS, CSE Name of Requester (print or type)	**Principal Environ. Scientist** Title (if applicable)
Signature of Preparer (if different than above)	Date
Name of Preparer (print or type)	Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Or email request to: deep.nddbrequest@ct.gov

Figure 1: Site Locus; 189 Lake Road, Killingly, CT



71°55.000' W
WGS84 71°54.000' W

NATIONAL GEOGRAPHIC

0.0 0.1 0.2 0.3 0.4 0.5 miles
0.0 0.5 km

MN TN
14°
02/05/16

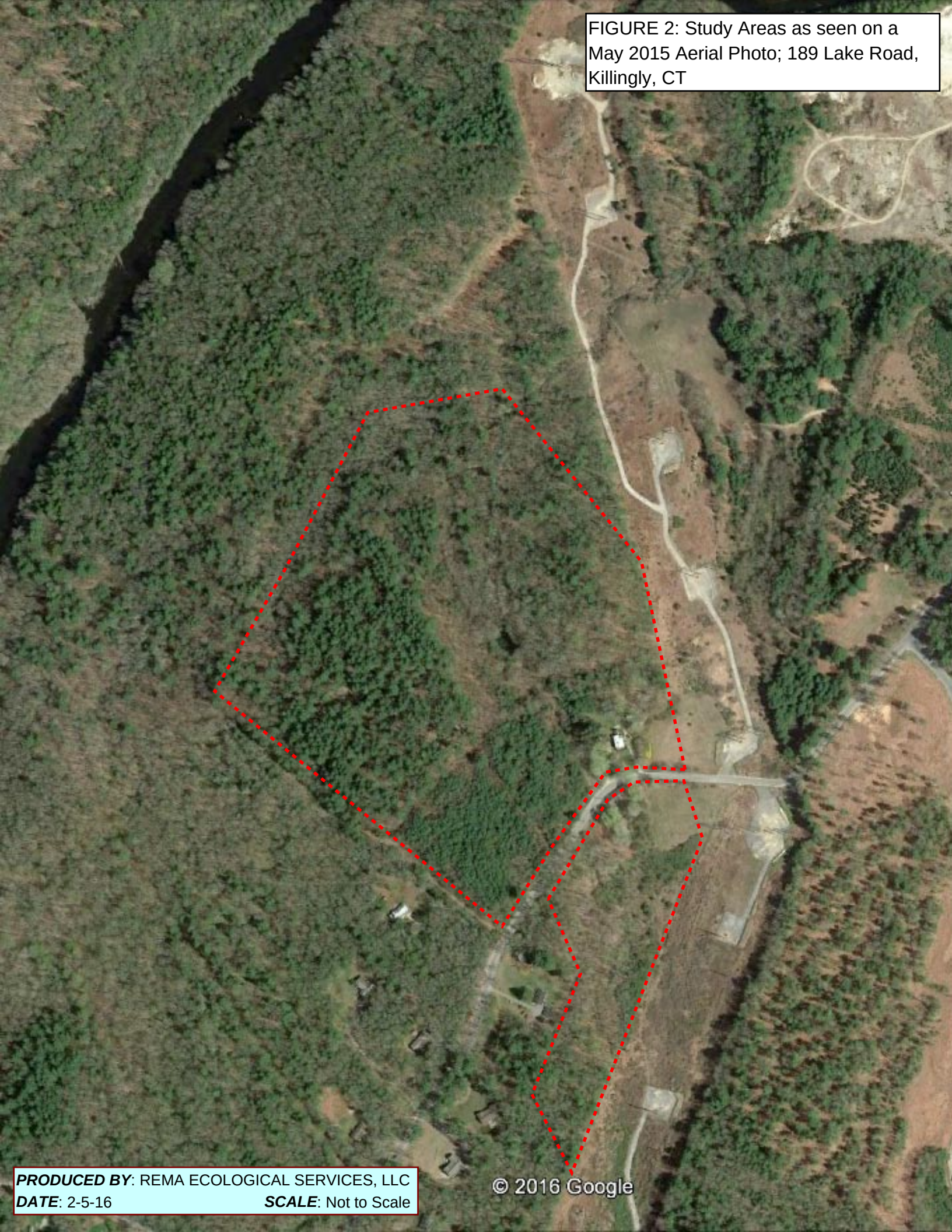


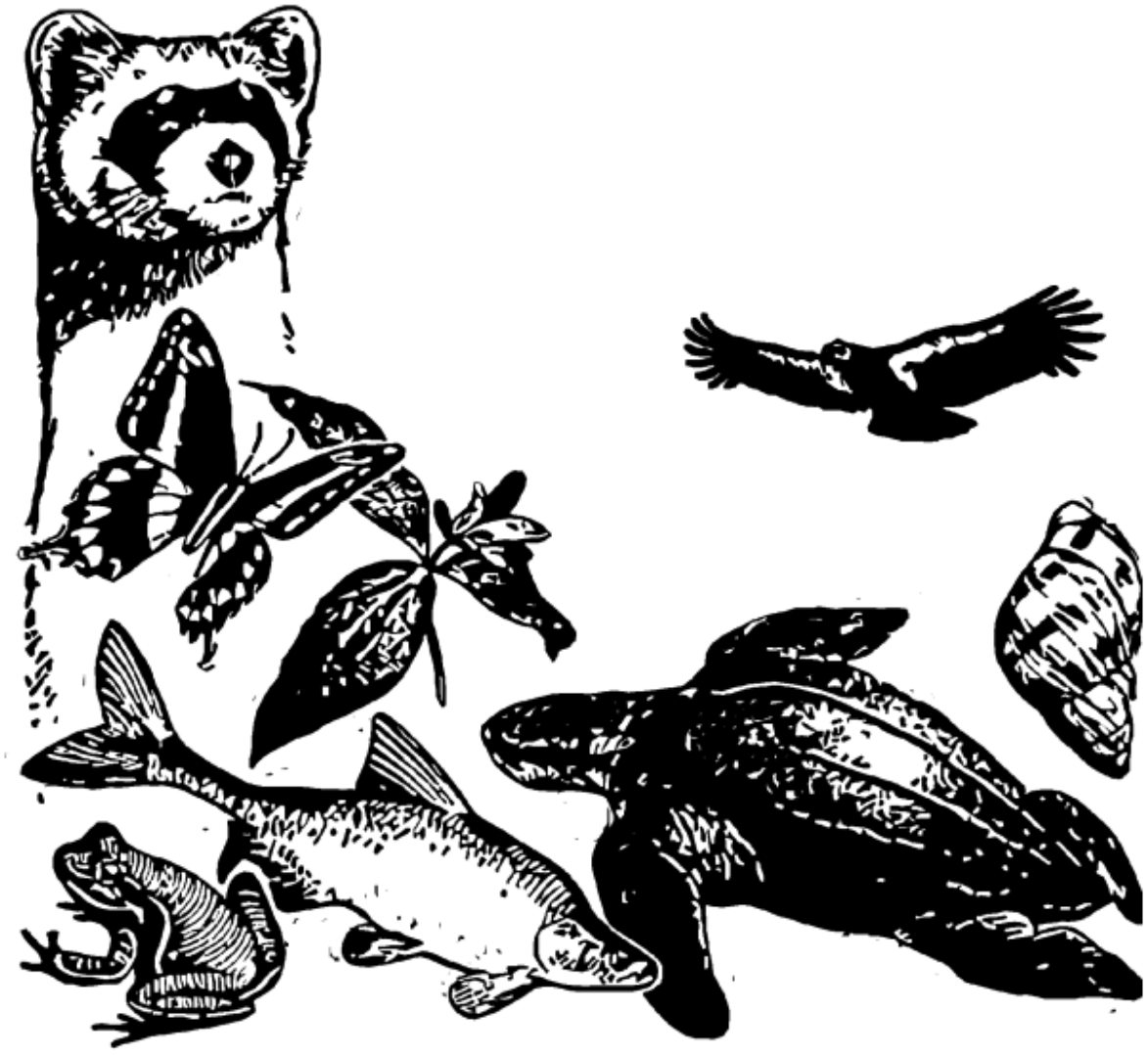
FIGURE 2: Study Areas as seen on a May 2015 Aerial Photo; 189 Lake Road, Killingly, CT
PRODUCED BY: REMA ECOLOGICAL SERVICES, LLC
DATE: 2-5-16
SCALE: Not to Scale
© 2016 Google

U.S. Fish & Wildlife Service

IPaC Trust Resources Report

Generated May 10, 2016 09:41 AM MDT, IPaC v3.0.7

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



IPaC - Information for Planning and Conservation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

Table of Contents

U.S. Fish & Wildlife Service

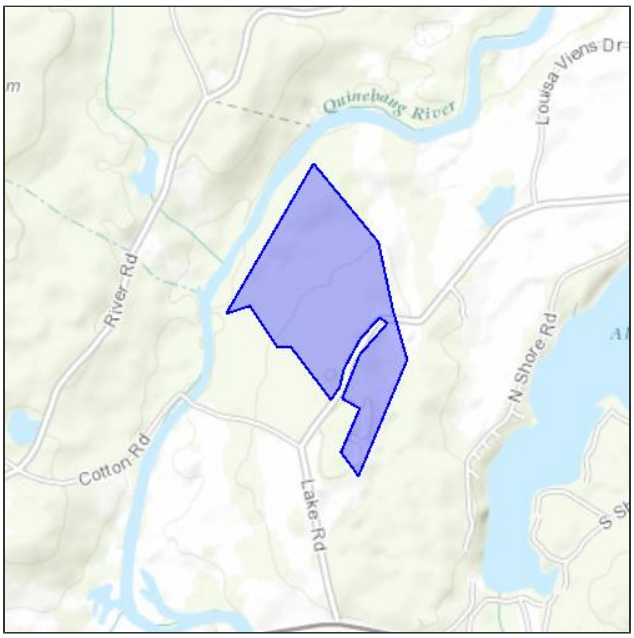
IPaC Trust Resources Report

LOCATION

Windham County, Connecticut

IPAC LINK

https://ecos.fws.gov/ipac/project/OTWS5-YUVNN-DNHGV-OJWL4-GC2OM4



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the Endangered Species Program of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Mammals

Northern Long-eared Bat Myotis septentrionalis — Threatened

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A0JE

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

---

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
  http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds
  http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data
  http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The following species of migratory birds could potentially be affected by activities in this location:

American Oystercatcher Haematopus palliatus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0G8

American Bittern Botaurus lentiginosus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F3

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B008

Black-billed Cuckoo Coccyzus erythropthalmus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HI

Blue-winged Warbler Vermivora pinus — Bird of conservation concern
Season: Breeding

Canada Warbler Wilsonia canadensis — Bird of conservation concern
Season: Breeding

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Wintering

Least Bittern Ixobrychus exilis
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B092

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU

Pied-billed Grebe Podilymbus podiceps — Bird of conservation concern
Year-round

Prairie Warbler Dendroica discolor — Bird of conservation concern
Season: Breeding

Purple Sandpiper Calidris maritima — Bird of conservation concern
Season: Wintering

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Wintering
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD

Upland Sandpiper Bartramia longicauda — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HC

Willow Flycatcher Empidonax traillii — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F6

Wood Thrush Hylocichla mustelina — Bird of conservation concern
Season: Breeding

Worm Eating Warbler Helmitheros vermivorum — Bird of conservation concern
Season: Breeding

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Wetland data is unavailable at this time.