Appendix F-4
Acoustic Survey- Long Eared Bat

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23 June 2015

Steven T. Papa
U.S. Fish & Wildlife Service
Long Island Field Office
340 Smith Road
Shirley, NY 11967

Subject: Proposed Bat Acoustic Survey Study Plan for the St. Ignatius Retreat House Site
251 Searingtown Road, North Hills, Town of North Hempstead, Nassau County

Dear Mr. Papa:

Natural Resource Group, LLC (NRG) has been retained by Nelson, Pope, & Voorhis, LLC to conduct a federal-protocol acoustic survey for Northern Long-eared Bat (*Myotis septentrionalis*) on a ±30-acre site located on the west side of Searingtown Road, about ½ mile north of the Long Island Expressway, in North Hills, New York. The subject parcel is currently occupied by the St. Ignatius Retreat House, and is proposed for some site expansion that will require forest habitat clearing. The site falls within the range of the Northern Long-eared Bat, and contains mature deciduous forest that is contiguous with surrounding deciduous forested habitat, and contains snags and other potential roost trees greater than 3 inches diameter at breast height (DBH), which could provide potential bat roosts. An aerial photo of the site illustrating cover types (Figure 1) is attached for your reference. This letter outlines our proposed study plan for the Phase 2 acoustic presence/probable absence surveys for Northern Long-eared Bat, and is submitted for your review and approval.

Site Description:

The St. Ignatius site is a ±30-acre parcel located on the west side of Searingtown Road, across from Christopher Morley Park, about ½ mile north of the Long Island Expressway, in the North Hills section of the Town of North Hempstead, Nassau County, NY. The property ranges in elevation from 200 to 270 feet above mean sea level (MSL), and mostly drains to the east.

Ecological cover types found on the site include coastal oak-hickory forest, successional southern hardwood forest, mowed lawn with trees, paved road/path, and a recharge basin. A vegetation cover type map (Figure 1), illustrating the distribution and extent of these cover types, is attached to this study plan for reference. The mature forest community and recharge basin provide potentially suitable habitat for Northern Long-eared Bats, reinforced by the connective corridor of similar habitat across Searingtown Road from the site, in Christopher Morley Park. Clearing of this habitat for facility expansion could adversely affect Northern Long-eared Bats if they occupy the site, by causing loss of roost trees and foraging area. Therefore, it

is prudent to determine whether Northern Long-eared Bats use or occupy the site, so that appropriate conservation measures may be planned to avoid adverse effects to them.

Study Plan:

According to the *Northern Long-eared Bat Interim Conference and Planning Guidance, USFWS Regions 2, 3, 4, 5, & 6* (USFWS 2014), methods for presence/probable absence surveys outlined in the *2015 Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS 2015) (Guidelines) also apply to Northern Long-eared Bat. Options for presence/probable absence surveys include Phase 2 mist net surveys or acoustic surveys, as outlined in Appendix B and Appendix C of the Guidelines, respectively. NRG is proposing to conduct a Phase 2 acoustic survey of the St. Ignatius site, per the methods outlined in Appendix C of the Guidelines.

Appendix C of the Guidelines requires that non-linear study sites must receive at least 4 detector-nights of survey effort for up to 123 acres (1/2 square kilometer) of suitable summer habitat. The St. Ignatius site is about half forested, so 4 detector-nights of effort, implemented over the course of at least 2 nights, is the appropriate level of effort for this site.

NRG proposes to deploy 2 to 3 Wildlife Acoustics SM3BAT full-spectrum bat detectors with SMM-U1 microphones fitted with unidirectional cones (Wildlife Acoustics, Maynard, MA, USA) at appropriate locations on the St. Ignatius site for at least 2 nights to passively record bat vocalizations. Figure 1 illustrates proposed locations for each detector. Bat habitat at the site will be further documented on site when bat detectors are deployed. Bat detector microphones will be placed along probable bat travel corridors to record high-quality, search-phase calls. NRG will deploy unidirectional microphones:

- At least 200 m (656 feet) apart, distributed in appropriate habitat across the site;
- At least 1.5 m (5 feet) from vegetation or other obstructions within the reception cone of the microphone;
- In areas without, or with minimal vegetation clutter within 10 m (33 feet) in front of the microphone;
- Parallel (or nearly so) to woodland edges, and more than 15 m (49 feet) from suitable roost structures;
- Greater than 1.5 m (5 feet) above ground-level vegetation, with microphones mounted horizontally, or inclined up to 45 degrees above the horizontal;
- Mounted to natural vegetation (*e.g.*, branches) or on poles that are located near natural vegetation or other existing landscape structure, such that the structure or vegetation does not interfere with the reception cone, but also such that the microphone does not stand out as a new or novel object in the landscape.
- Without additional/after-market weatherproofing. Wildlife Acoustics SMM-U1 microphones with unidirectional horns are considered weatherproof out-of-the-box.

Locations of microphones will be plotted with a handheld, 12-channel global positioning system (GPS) to verify location and spacing. Each microphone's placement and reception cone will be photographed to document microphone set up. Microphones will be calibrated immediately prior to deployment, using methods developed by Wildlife Acoustics, and

functioning of the microphones will be confirmed by generating ultrasonic noise within the reception cone at set up.

Bat detectors will be set to record from sunset to sunrise for at least 2 nights. Weather will be monitored by the nearest NOAA National Weather Service Station in order to document compliance with required weather criteria outlined in the Guidelines. A night's recording will be considered in compliance with weather criteria if the night's weather conditions exhibit the following metrics within the first 5 hours of recording:

- Air temperature of at least 10°C
- Precipitation of less than 30 minutes continuous duration, or intermittently
- Sustained wind speed of <4 m/s (9 mph)

If these weather conditions are not met in any sample night, that sample night will be repeated until appropriate weather conditions occur.

Upon completion of the monitoring period, recorded bat calls will be retrieved from the detectors for analysis. If no calls are recorded, the detector log files will be reviewed to determine whether the detector was functioning properly. If the detector log files indicate proper functioning, no further recording will be done. If a detector is found to be malfunctioning, it will be replaced with another recording unit, and the sampling will be repeated.

Calls will be run through Kaleidoscope Pro version 3.1.1 with the version 2.2 bat identifiers (Wildlife Acoustics, Inc., Maynard, MA, USA) (current USFWS-approved version) for auto-identification of bat species. If Northern Long-eared Bat presence is not considered likely (MLE p-value >0.05), then no further review will be conducted. If Northern Long-eared Bat presence is considered likely by Kaleidoscope Pro (MLE p-value <0.05), then all calls for that site and night will be manually reviewed by a qualified bat biologist that has taken at least one course in acoustic monitoring set up and interpretation, and has field experience in manual interpretation of bat calls.

NRG will document this study in a report that will summarize these methods, as well as any deviations (if any) from these methods that were necessary. The report will include documentation of weather conditions, maps indicating locations of bat detectors, photographs of each bat detector set up and reception cone, as well as appendices containing Kaleidoscope Pro auto-identification output, and results from manual interpretation of calls, if that is performed. Manual interpretation of calls will be documented with notes of call metrics that were used to make manual identifications.

The study report will also document the habitat on the site, explain any modifications of the study plan (if any) that were implemented, describe survey sites, indicate survey dates and duration, weather conditions, and a summary of findings. Equipment testing procedures will be reviewed. The report will include a map illustrating the bat detector locations, with GPS coordinates of each location indicated. Site and equipment photos will illustrate habitat, equipment set up, and reception cones of microphones. Survey personnel will be identified and their qualifications will be addressed within the report. Finally, findings of the report will be summarized and raw data will be provided in an appendix to the report. Raw call recordings will

be archived, and NRG will store calls for 7 years. Calls will be available for agency review upon agency request.

We propose to conduct this survey as soon as this study plan is approved. If you have questions about this study plan, or require further information, please contact me directly at (315) 456-8731, or at michael.fishman@nrg-llc.com. I look forward to hearing from you, and to conducting this survey.

Sincerely,

Natural Resource Group, LLC

Michael S. Fishman, CWB
Biological Field Services Manager, Protected Species

Enclosures: Figure 1 –Site Aerial Photo with Habitat Types and Proposed Sampling Sites

USFWS APPROVAL

☐ USFWS approves of this Plan as presented

☐ USFWS approves of this Plan with the recommended changes outlined in the attached document or below:

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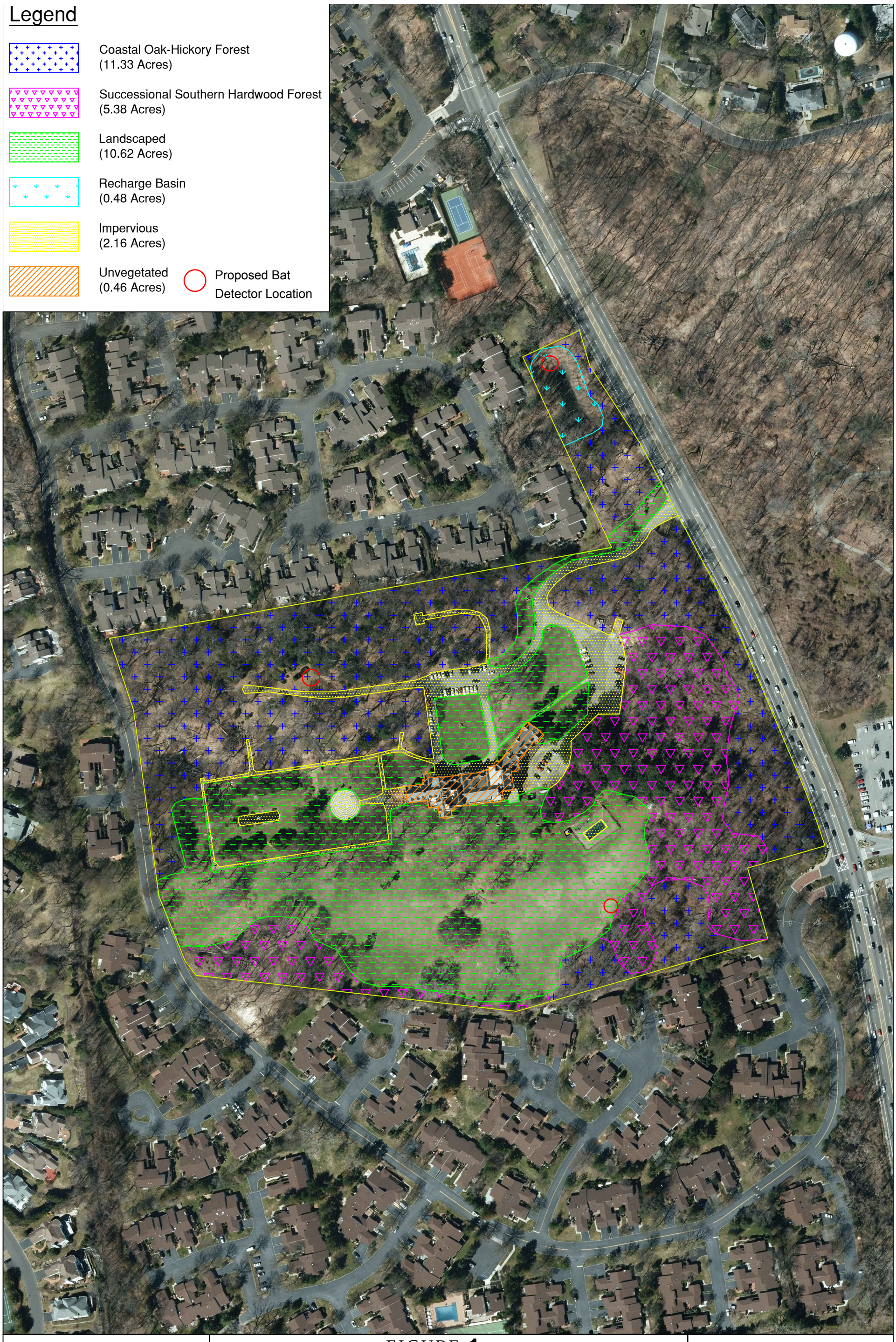
_____ _____
Signature of USFWS Personnel Date

_____
Name of USFWS Personnel



NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

FIGURE **1**
HABITAT MAP

Source: NYSGIS Orthoimagery Program, 2013
Scale: 1" = 200'

NORTH

251 Searingtown Road,
North Hills

DEIS

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21 August 2015

Lara H. Pomi-Urbat
Nelson, Pope, & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747

Subject: Preliminary Findings of the Acoustic Survey for Northern Long-eared Bat at the St. Ignatius Retreat House Site, Searingtown Road, North Hills, Nassau Co., NY

Dear Ms. Pomi-Urbat:

NRG completed the field recording for the acoustic survey for federally-listed threatened Northern Long-eared Bats (*Myotis septentrionalis*) at the St. Ignatius Retreat House site on 31 July 2015. This letter summarizes our preliminary findings, which are enough to confirm that Northern Long-eared Bats were not detected on the site, and are therefore not considered likely to occur there.

Sampling was conducted at 2 sites on the property over the course of 2 nights (08 July and 30 July 2015, using Wildlife Acoustics model SM3BAT+ bat detectors (Wildlife Acoustics, Inc., Maynard, MA, USA). Bat detectors were set up in mature forested areas with open understory and along corridors along which bats were likely to travel. Each detector was set up such that its microphone was at least 1.5 meters above the ground, was inclined above the horizontal to capture bat calls from overhead, and were at least 15 m from vegetative clutter in front of the microphone. Each bat detector was set to record from sunset to sunrise, and subsequent checks of hourly weather conditions on the nights sampled indicated that temperatures remained above 50°F, wind remained below 9 mph, and no precipitation occurred during at least the first 5 hours of recording time. Calls were analyzed using Kaleidoscope Pro, version 3.1.0, set to convert full-spectrum recordings to zero-crossing recordings and with sensitivity settings set to, "-1 more sensitive (Liberal)", as required by USFWS in their list of Approved Automated Acoustic ID Software Programs (http://www.fws.gov/midwest/endangered/mammals/inba/surveys/inba/AcousticSoftware.html). These sampling sets and analysis conditions are all in compliance with the requirements set forth in the federal protocol for conducting acoustic surveys for Northern Long-eared Bats, in Appendix C of the *2015 Range-Wide Indiana Bat Summer Survey Guidelines* (Guidelines), which also applies to Northern Long-eared Bats.

We recorded 1,260 sound files during the 4 detector-night effort (1 detector night = 1 detector recording for 1 night). Call times were distributed across the sampling period from sunset to sunrise on both detectors, indicating that the recorders functioned correctly throughout the sampling periods. The first night's recordings indicated the presence of Big Brown Bats (*Eptesicus fuscus*), Hoary Bats (*Lasiurus cinereus*), Silver-haired Bats (*Lasionycteris noctivagans*), Eastern Red Bat (*Lasiurus borealis*), and Little Brown Bat (*Myotis lucifugus*). Both Eastern Red Bat and

Little Brown Bat produce calls with frequencies greater than 35 kHz, and are therefore considered high-frequency calling bats. The maximum likelihood estimator p-values (an indicator of confidence in the identification in which numbers below 0.05 indicate high level of confidence) for the Little Brown Bats was 3.24×10^{-5}, indicating strong confidence in the identifications of this species. Per the Guidelines, this required a manual review of all calls for that night to determine whether any of them may have been calls produced by Northern Long-eared Bats. We have reviewed the calls and have found that some of the calls identified as Little Brown Bats were correctly identified by the auto-identification software (hence the high confidence), some were actually calls of Eastern Red Bats, but that none of the calls exhibited any of the metrics that could identify the calls as those of the Northern Long-eared Bat. Therefore, our manual review of the call files has confirmed our preliminary finding that Northern Long-eared Bats were not detected on the St. Ignatius Retreat House site, and are therefore not likely to occur there. None of the detected bat species are currently listed as threatened or endangered at the state or federal level. We are preparing a more detailed report that will summarize call identifications in more detail. That report should follow within a week or two.

Thank you for engaging NRG to conduct this survey. If you have any questions about our methods or results on this survey, please feel free to contact me directly at (315) 456-8731, or at michael.fishman@nrg-llc.com.

Sincerely,

Natural Resource Group, LLC

Michael S. Fishman
Biological Field Services Manager – Protected Species