

APPENDIX O

Florida Bonneted Bat and Tricolored Bat Acoustic Survey Technical Memorandum

memorandum

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SR 70 from Jefferson Avenue to CR 29
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Highlands County, Florida

Introduction

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to evaluate various alternatives for the State Road (SR) 70 roadway improvement project from Jefferson Avenue to County Road (CR) 29 located within Highlands County, Florida (**Figure 1**).

The project limits fall within the U.S. Fish and Wildlife Service (USFWS) Florida bonneted bat (*Eumops floridanus*) Consultation Area (CA) and within the range for the tricolored bat (*Perimyotis subflavus*). Based on the availability of potential roosting and foraging habitat and the project's size being greater than five acres, a species-specific Florida bonneted bat acoustic survey was determined to be necessary for this project. The tricolored bat was proposed for listing as an endangered species in 2022 (87 Federal Register 56381 56393). Although not yet listed, due to the project's location in the tricolored bat range and presence of suitable habitat, results of the acoustic survey will be analyzed for the presence of tricolored bats in addition to Florida bonneted bats.

Acoustic surveys were conducted in accordance with the 2024 USFWS Florida Bonneted Bat Consultation Guidelines and The Indiana Bat and Northern Long-eared Bat Survey Guidance (USFWS 2024a). A proposed survey methodology memorandum was submitted to the USFWS prior to the start of surveys and was approved on March 20, 2025. The Methodology Memorandum is included as **Appendix A**. Per guidance from the FDOT's Office of Environmental Management (OEM), the Florida Bonneted Bat Consultation Key, included in the USFWS 2019 Florida Bonneted Bat Consultation Guidelines, was used to evaluate potential effects to the species from the proposed project, and the USFWS 2024 Florida Bonneted Bat Consultation Guidelines were adhered to while conducting surveys. This report summarizes the methods and results of the species-specific acoustic surveys for the Florida bonneted bat and tricolored bat.

Species Information

Species and Habitat Description

Florida bonneted bat

The Florida bonneted bat has a body length of 84 to 108 millimeters (mm) (approximately 3.75 inches) with a wingspan of 490 to 530 mm (approximately 20 inches), making it the largest species of bat in Florida. Its fur color can range from a dark grey to reddish brown. A distinguishing characteristic of the Florida bonneted bat is its large, rounded ears that are joined at the midline of the forehead. There is no significant difference in size or appearance between males and females. Florida bonneted bat echolocations have a frequency range of 10-25 kilohertz (kHz).

Very little is known about the life history and ecology of the Florida bonneted bat. Natural roosting habitat for this species includes forested areas containing tall mature trees such as pine flatwoods, mixed or hardwood hammocks, wetland forested systems, and sand pine scrub. In these natural habitats, Florida bonneted bats may roost in tree snags, tree cavities, tree crevices, under loose bark, or other deformities of mature trees. Documented roosts have occurred in trees greater than six meters (20 feet) tall, with a diameter-at-breast height (DBH) of 20.3 centimeters (cm) (8 inches) and having cavities higher than 4.6 meters (15 feet) above ground. Florida bonneted bats have also been documented roosting in urban/suburban areas. Roosts have been documented to occur in the fronds of royal palm (*Roystonea regia*) trees, tree cavities, underneath Spanish tile roofs, in attics, rock or brick chimneys of buildings, cavities in utility poles, and manmade bat houses.

This species can cover large areas when foraging. Studies at the Babcock-Webb Wildlife Management Area (WMA) conducted with Florida bonneted bats fitted with Global Positioning System (GPS) satellite tags documented the maximum distance detected from a capture site was 24.2 miles and the longest path traveled in a single night was 56.3 miles. In a sample size of eight individuals, Florida bonneted bats were documented traveling a mean maximum distance of 9.5 miles from the roost.

Tricolored bat

The tricolored bat measures around 3.5 inches and is the smallest bat in the eastern United States. The tricolored bat is identified as having a dark base, yellowish midsection, and a dark tip. The overall color is yellow-tan with a harlequin appearance. The forearm skin is reddish, contrasting with a black membrane.

Tricolored bats are found throughout Florida, except the Florida Keys. During the winter, tricolored bats are found in caves and mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves. They utilize a variety of roosting structures including live or recently dead trees, buildings, and crevices in cliffs and rocks. The small, insect-eating bats prefer to roost in mature hardwood forests, caves, and less commonly manmade structures. Tricolored bats forage in waterways, forests, and agricultural areas where small insects can be found.

In addition to habitat loss and climate change, white nose syndrome (WNS) is a major contributor to the decline of this species and is listed as the main reason for the proposed listing. WNS is a fungal disease characterized by a white growth appearing on the muzzle and wings of hibernating bats. It has led to 90 to 100% declines in tricolored bat winter colony abundance at sites impacted by the disease. Since WNS was first observed in New York in 2006,

it has spread rapidly across the majority of the tricolored bat range. No WNS cases have been reported in Florida. However, its effects on populations in other states have the potential to affect tricolored bat populations in Florida.

Status

Florida bonneted bat

The Florida bonneted bat is listed as a federally designated endangered species by the USFWS and is protected by the Endangered Species Act, as amended (16 U.S. Code (U.S.C.) 1531-1544, 87 Stat. 884). In June 2020, the USFWS proposed draft language for designation of critical habitat (CH) for the species. Following a public comment period and in response to new information, the USFWS revised the proposed rule designating CH in November 2022 and made the rule available for public comment through January 23, 2023. The revised rule includes nine CH units (Kissimmee, Peace River, Babcock, Fisheating Creek, Corkscrew, Big Cypress, Everglades Tree Islands, Long Pine Key, and Miami Rocklands) covering portions of 13 counties. On March 7, 2024, the USFWS officially designated the nine CH units for the Florida bonneted bat (2024 Federal Register Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Endangered Florida Bonneted Bat). The SR 70 project does not fall within the CH. The western project limit is approximately 12 miles northeast of the northern portion of the Florida bonneted bat Unit 4 CH polygon. The project also does not fall within any assumed presence polygons identified within the guidelines.

Florida bonneted bats are unique from other bat species in Florida because they are reproductively active through most of the year, and their large size makes them capable of foraging long distances from their roost. Consequently, this species is vulnerable to disturbances around the roost during the greater portion of the year and considerations about foraging habitat extend further than the localized roost. Furthermore, impacts to their foraging habitat can also have adverse effects, even if the impacts are located a significant distance from their roosts.

Tricolored bat

On September 13, 2022, the USFWS announced a proposal to list the tricolored bat as endangered under the Endangered Species Act (ESA). The Service developed final tools and guidance documents for the endangered northern long-eared bat and the proposed endangered tricolored bat, included in the USFWS Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects (USFWS 2024b). However, guidance was adopted between the USFWS and FDOT OEM in January 2025 to provide additional directions for FDOT staff and consultants regarding effect determination, project consultation, documentation within various reports and permit applications for the tricolored bat. This guidance includes reference to the use of the USFWS Indiana Bat and Northern Long-eared Bat Survey Guidance (USFWS 2024a) for habitat assessment and survey protocol when determining procedures that will be followed for FDOT projects in preparation for potential listing for the tricolored bat. In the event that the tricolored bat is listed as endangered under the ESA, these tools would be applicable to both species. Designated CH is not proposed for the tricolored bat at this time.

Per the USFWS 2024 Florida Bonneted Bat Consultation Guidelines, when surveying for both the Florida bonneted bat and tricolored bat, surveys are only valid if conducted March 1 to October 15.

Methodology

Desktop Data Collection

A comprehensive literature and Geographic Information System (GIS) database search was conducted for the project area to determine if the Florida bonneted bat was previously documented within the project limits and if suitable roosting or foraging habitat was available. The literature and database search included the following: 2017-2019 South Florida Water Management District (SFWMD) Land Use Land Cover spatial data, 2023 USFWS National Wetlands Inventory (NWI) spatial data, USFWS Florida Bonneted Bat Consultation Area spatial data, 2024 USFWS Florida Bonneted Bat Consultation Guidelines, 2019 USFWS Florida Bonneted Bat Consultation Key, 2024 Federal Register Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Endangered Florida Bonneted Bat, and current aerial imagery.

Based on this preliminary protected species data collection effort, Florida bonneted bat and tricolored bat findings include the following:

- The project falls within the USFWS Florida bonneted bat Consultation Area (CA);
- The project does not fall within a USFWS Florida bonneted bat assumed presence polygon;
- The project does not fall within a USFWS Florida bonneted bat Critical Habitat (CH) polygon,
- The project falls within the USFWS range for the tricolored bat; and
- Potentially suitable foraging and roosting habitat was identified within the project boundary for both species.

Field Surveys

The Florida bonneted bat acoustic surveys followed the protocol documented in the 2024 USFWS Florida Ecological Services Office - Florida Bonneted Bat Consultation Guidelines (USFWS 2024) in conjunction with the Indiana Bat and Northern Long-eared Bat Survey Guidance Appendix J for year-round acoustic surveys. For linear projects that contain potential roosting and foraging habitat and that are also greater than five acres in size, the SR 70 project mainline requires surveys for a minimum of nine detector nights per 0.6 miles. A total of nineteen (19) acoustic monitoring stations were developed based on the guidelines, project length, and evaluation of habitat within the project area.

Per the Guidelines, the following weather conditions are required to be met for the first five hours of each survey night:

- Temperature at or above 60 degrees Fahrenheit;
- Precipitation events, including rain and/or fog cannot exceed 30 minutes in length or continue intermittently during the first five hours; and
- Sustained wind speeds cannot be greater than nine miles per hour for 30 minutes or more.

Qualified biologists conducted two (2) deployment efforts to set up the 19 detectors for acoustic surveys. The first deployment included Stations 16-19, and acoustic surveys took place from April 22 to May 13, 2025. The second deployment included Stations 1-15, and acoustic surveys were conducted from May 14-25, 2025. The acoustic

survey station locations are depicted in **Figure 2**. Representative photos of the acoustic survey stations are provided in **Appendix B** and the survey locations and dates for each survey station are provided in **Table 1**.

Due to unfavorable weather conditions, the first deployment totaled twenty-one (21) nights, and the second deployment totaled thirteen (13) nights. Per the 2024 Florida Bonneted Bat Consultation Guidelines, if detectors are deployed for longer than 14 nights, coordination with the Florida bonneted bat recovery lead would be required. Coordination with USFWS personnel took place on June 5, 2025. During the meeting it was confirmed that it was acceptable to utilize data gathered over nine non-consecutive nights with a duration exceeding 14 nights.

TABLE 1
EQUIPMENT DEPLOYMENT DETAILS

Station	Latitude	Longitude	Deployment Dates (2025)	Notes
1	27.208338° N	81.397222° W	5/14/2025 (PM) – 5/26/2025 (AM)	Weather conditions met criteria on survey dates May 14-20, 22, 24-25, 2025.
2	27.208098° N	81.388540° W		
3	27.208380° N	81.379810° W		
4	27.208827° N	81.371484° W		
5	27.206485° N	81.369441° W		
6	27.206795° N	81.365525° W		
7	27.208831° N	81.362846° W		
8	27.206610° N	81.357303° W		
9	27.210750° N	81.351267° W		
10	27.221171° N	81.350216° W		
11	27.210702° N	81.345619° W		
12	27.212309° N	81.339600° W		
13	27.208305° N	81.337054° W		
14	27.208814° N	81.328061° W		
15	27.207903° N	81.319511° W	4/22/2025 (PM) – 5/13/2025 (AM)	Weather conditions met criteria on survey dates April 25-26 and 30, May 2, 4, 7, 8, 10, and 12, 2025.
16	27.208192° N	81.311718° W		
17	27.208209° N	81.302073° W		
18	27.208631° N	81.293315° W		
19	27.208281° N	81.284164° W		

To maximize the detection of Florida bonneted bats and tricolored bats, each monitoring station was placed in an area that could be used as a potential flight path for the bat species. This includes targeting areas which may provide potential roosting or foraging habitat such as a cluster of pine trees, a section of cypress swamp/dome, an area with snags, or a water feature. At each monitoring station, a Wildlife Acoustics Song Meter SM4BAT Full Spectrum (FS) acoustic detector was deployed by qualified biologists who are trained and experienced in setting up, operating, and maintaining bat acoustic detection equipment. The detectors were set to record 15-second file lengths and have a two-second trigger window based on training received from industry experts and the current 2024 USFWS Florida Bonneted Bat Consultation Guidelines and USFWS Indiana Bat and Northern Long-eared Bat Survey Guidance (2024). Each detector was set to automatically begin collecting data continuously from 30 minutes before sunset to 30 minutes after sunrise for nine nights at each station.

At each monitoring station, an omnidirectional Wildlife Acoustic SMM-U2 External Ultrasonic Microphone, placed on an extendable pole approximately 10 feet in height, was deployed. A minimum distance of 300 meters was maintained between deployed detectors. The microphone was situated in an area clear of vegetation two meters in all directions and was fully free of vegetative or other clutter from ground to sky. Microphones were directed away from surrounding vegetation, electrical wires and transmission lines, echo-producing surfaces including open water, and away from potential external noise sources. Metadata for each detector, consistent with the Acoustic Detector Deployment Example Data Sheet included in the 2024 USFWS Florida Bonneted Bat Consultation Guidelines, was documented. Data sheets for each acoustic survey station are included as **Appendix C**.

Data Analysis

The Wildlife Acoustics Song Meter SM4BAT Full Spectrum detector records bat echolocations as Waveform Audio (WAV) files. A single WAV file is made up of a series of pulses that are considered a single bat pass. The WAV files recorded at each survey station were analyzed using Wildlife Acoustics Kaleidoscope Pro version 5.7.0. The auto-identification parameters used by Kaleidoscope Pro were from Bats of North America (Version 5.7.0), region Florida, and the sensitivity setting was set to +1 More Accurate (Conservative). The species to be selected in the auto-identification classifier included: big brown bat (*Eptesicus fuscus*), Florida bonneted bat, eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), Seminole bat (*Lasiurus seminolus*), southeastern myotis (*Myotis austroriparius*), northern myotis/northern long-eared bat (*Myotis septentrionalis*), evening bat (*Nycticeius humeralis*), tri-colored bat, and Brazilian free-tailed bat (*Tadarida brasiliensis*).

The bat acoustic data was retrieved, saved, analyzed, and interpreted by experienced biologists who have taken one or more bat acoustic courses/workshops and who have also previously reviewed Florida bonneted bat and tricolored bat echolocations using Kaleidoscope Pro. All echolocations auto-identified by Kaleidoscope Pro as being created by the two focal species were visually reviewed and manually verified by experienced biologists.

The following parameters were considered in manual verification of Florida bonneted bat echolocations:

- Whether the characteristic frequency of echolocations fall within the documented range (10-25kHz) for the Florida bonneted bat;
- Whether there are three or more echolocations where the time between echolocations remained consistent across the sequence of echolocations;
- Whether the minimum frequency remained consistent across the sequence of echolocations;
- Whether the slope and bandwidth remained consistent from echolocation to echolocation; and
- Whether there was good signal to noise ratio as evidenced by a crisp, clean oscillogram.

If a series of echolocations only met some of these requirements, and they are within the characteristic frequency of the Florida bonneted bat, these echolocations were classified as potentially coming from a Florida bonneted bat. All WAV files with characteristic frequencies below 30 kHz not assigned an auto-identification and classified by Kaleidoscope Pro as “No ID” were manually reviewed to determine if they could contain Florida bonneted bat echolocations i.e., pulses.

The following parameters were considered in manual verification of tricolored bat echolocations:

- Whether the characteristic frequency of echolocations fall within the documented range (>35-40 kHz) for the tricolored bat;
- Whether the characteristic frequency of echolocations was consistent above or below 40 kHz; and
- Whether these echolocations exhibited a high-frequency onset followed by a flat body (“hockey stick” shape).

If a series of echolocations met all of these requirements, they were classified as coming from the tricolored bat. Some WAV files contained echolocations that were faint, making it difficult to ascertain the complete shape of the pulses. Due to the similarity of echolocations between the tricolored bat and other species within the frequency range, these echolocations were classified as potentially coming from a tricolored bat. For any survey stations that did not indicate the presence of the tricolored bat through auto-identification, all WAV files with a minimum frequency above 35 kHz and a characteristic frequency below 50 kHz not assigned an auto-identification and classified by Kaleidoscope Pro as “No ID” were reviewed to determine if they could contain tricolored bat echolocations.

Results

Weather data was obtained from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information Local Climatological Data for the Sebring Regional Airport Station weather station and filtered for the weather data capturing the time period from 30 minutes prior to sunset to 30 minutes after sunrise and is provided in **Appendix D**. Start and end times for the surveys for each day is included in Table 2 below. The Sebring Regional Airport Station weather station is approximately 25 miles north of the project site. Weather data was used from this station for the dates April 22 to May 26, 2025.

A summary of the acoustic data collected at each survey station is listed in **Appendix E** and is detailed in the following sections. This summary includes the total number of nights the detectors were deployed and the nights during which the weather conditions met the requirements in the Guidelines. The results of the Florida bonneted bat analysis were packaged as required and uploaded into the NABat database concurrent with data analysis. All WAV files were matched to the metadata files for each station and no errors were reported.

TABLE 2
SURVEY START AND END TIMES

Date	Sunset	Sunrise	Survey Start	Survey End
First Deployment				
4/22/2025 – 4/23/2025	7:54:00 PM	6:53:00 AM	7:24:00 PM	7:23:00 AM
4/23/2025 – 4/24/2025	7:54:00 PM	6:52:00 AM	7:24:00 PM	7:22:00 AM
4/24/2025 – 4/25/2025	7:55:00 PM	6:51:00 AM	7:25:00 PM	7:21:00 AM
4/25/2025 – 4/26/2025	7:55:00 PM	6:50:00 AM	7:25:00 PM	7:20:00 AM
4/26/2025 – 4/27/2025	7:56:00 PM	6:49:00 AM	7:26:00 PM	7:19:00 AM
4/27/2025 – 4/28/2025	7:56:00 PM	6:48:00 AM	7:26:00 PM	7:18:00 AM
4/28/2025 – 4/29/2025	7:57:00 PM	6:47:00 AM	7:27:00 PM	7:17:00 AM
4/29/2025 – 4/30/2025	7:57:00 PM	6:47:00 AM	7:27:00 PM	7:17:00 AM
4/30/2025 – 5/1/2025	7:58:00 PM	6:46:00 AM	7:28:00 PM	7:16:00 AM
5/1/2025 – 5/2/2025	7:59:00 PM	6:45:00 AM	7:29:00 PM	7:15:00 AM
5/2/2025 – 5/3/2025	7:59:00 PM	6:44:00 AM	7:29:00 PM	7:14:00 AM
5/3/2025 – 5/4/2025	8:00:00 PM	6:44:00 AM	7:30:00 PM	7:14:00 AM
5/4/2025 – 5/5/2025	8:00:00 PM	6:43:00 AM	7:30:00 PM	7:13:00 AM
5/5/2025 – 5/6/2025	8:01:00 PM	6:42:00 AM	7:31:00 PM	7:12:00 AM
5/6/2025 – 5/7/2025	8:01:00 PM	6:41:00 AM	7:31:00 PM	7:11:00 AM
5/7/2025 – 5/8/2025	8:02:00 PM	6:41:00 AM	7:32:00 PM	7:11:00 AM
5/8/2025 – 5/9/2025	8:03:00 PM	6:40:00 AM	7:33:00 PM	7:10:00 AM
5/9/2025 – 5/10/2025	8:03:00 PM	6:39:00 AM	7:33:00 PM	7:09:00 AM
5/10/2025 – 5/11/2025	8:04:00 PM	6:39:00 AM	7:34:00 PM	7:09:00 AM
5/11/2025 – 5/12/2025	8:05:00 PM	6:38:00 AM	7:35:00 PM	7:08:00 AM
5/12/2025 – 5/13/2025	8:05:00 PM	6:37:00 AM	7:35:00 PM	7:07:00 AM
Second Deployment				
5/14/2025 – 5/15/2025	8:07:00 PM	6:36:00 AM	7:37:00 PM	7:06:00 AM
5/15/2025 – 5/16/2025	8:07:00 PM	6:36:00 AM	7:37:00 PM	7:06:00 AM
5/16/2025 – 5/17/2025	8:08:00 PM	6:35:00 AM	7:38:00 PM	7:05:00 AM
5/17/2025 – 5/18/2025	8:08:00 PM	6:35:00 AM	7:38:00 PM	7:05:00 AM
5/18/2025 – 5/19/2025	8:09:00 PM	6:34:00 AM	7:39:00 PM	7:04:00 AM
5/19/2025 – 5/20/2025	8:09:00 PM	6:34:00 AM	7:39:00 PM	7:04:00 AM
5/20/2025 – 5/21/2025	8:10:00 PM	6:33:00 AM	7:40:00 PM	7:03:00 AM
5/21/2025 – 5/22/2025	8:11:00 PM	6:33:00 AM	7:41:00 PM	7:03:00 AM
5/22/2025 – 5/23/2025	8:11:00 PM	6:33:00 AM	7:41:00 PM	7:03:00 AM
5/23/2025 – 5/24/2025	8:12:00 PM	6:32:00 AM	7:42:00 PM	7:02:00 AM
5/24/2025 – 5/25/2025	8:12:00 PM	6:32:00 AM	7:42:00 PM	7:02:00 AM
5/25/2025 – 5/26/2025	8:13:00 PM	6:32:00 AM	7:43:00 PM	7:02:00 AM

Acoustic Survey Station 1

Station 1 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 13,352 WAV files were recorded, and of these, 2,017 WAV files were auto-identified to the species level, 596 WAV files were not assigned an auto-identification, and 10,739 WAV files were classified as noise. Thirteen (13) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of six (6) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected, and one (1) WAV file was confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (29 WAV files)
- Eastern red bat (4 WAV files)
- Hoary bat (305 WAV files)
- Northern yellow bat (66 WAV files)
- Seminole bat (64 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (14 WAV files)
- Brazilian free-tailed bat (1,516 WAV files)
- **Florida bonneted bat (13 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (6 WAV files with confirmed 1 WAV file)**

Acoustic Survey Station 2

Station 2 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 3,208 WAV files were recorded, and of these, 1,726 WAV files were auto-identified to the species level, 668 WAV files were not assigned an auto-identification, and 814 WAV files were classified as noise. Two (2) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of thirty-seven (37) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and twenty-six (26) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (130 WAV files)
- Eastern red bat (18 WAV files)
- Hoary bat (222 WAV files)
- Northern yellow bat (160 WAV files)

- Seminole bat (244 WAV files)
- Southeastern myotis (2 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (48 WAV files)
- Brazilian free-tailed bat (863 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (37 WAV files with confirmed 26 WAV files)**

Acoustic Survey Station 3

Station 3 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 5,451 WAV files were recorded, and of these, 2,432 WAV files were auto-identified to the species level, 871 WAV files were not assigned an auto-identification, and 2,148 WAV files were classified as noise. Thirteen (13) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of 122 WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and ninety-seven (97) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (318 WAV files)
- Eastern red bat (27 WAV files)
- Hoary bat (305 WAV files)
- Northern yellow bat (415 WAV files)
- Seminole bat (45 WAV files)
- Southeastern myotis (16 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (70 WAV files)
- Brazilian free-tailed bat (1,101 WAV files)
- **Florida bonneted bat (13 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (122 WAV files with confirmed 97 WAV files)**

Acoustic Survey Station 4

Station 4 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 5,612 WAV files were recorded, and of these, 2,581 WAV files were auto-identified to the species level, 1,075 WAV files were not assigned an auto-identification, and 1,956 WAV files were classified as noise. Six (6) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of fifty-nine (59) WAV files

were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and forty (40) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (233 WAV files)
- Eastern red bat (23 WAV files)
- Hoary bat (433 WAV files)
- Northern yellow bat (71 WAV files)
- Seminole bat (251 WAV files)
- Southeastern myotis (1 WAV file)
- Northern long-eared bat (0 WAV files)
- Evening bat (263 WAV files)
- Brazilian free-tailed bat (1,241 WAV files)
- **Florida bonneted bat (6 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (59 WAV files with confirmed 40 WAV files)**

Acoustic Survey Station 5

Station 5 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 2,838 WAV files were recorded, and of these, 1,142 WAV files were auto-identified to the species level, 428 WAV files were not assigned an auto-identification, and 1,268 WAV files were classified as noise. Five (5) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of forty-one (41) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and twenty-seven (27) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (38 WAV files)
- Eastern red bat (19 WAV files)
- Hoary bat (198 WAV files)
- Northern yellow bat (50 WAV files)
- Seminole bat (66 WAV files)
- Southeastern myotis (4 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (31 WAV files)
- Brazilian free-tailed bat (690 WAV files)
- **Florida bonneted bat (5 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (41 WAV files with confirmed 27 WAV files)**

Acoustic Survey Station 6

Station 6 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 3,264 WAV files were recorded, and of these, 1,621 WAV files were auto-identified to the species level, 602 WAV files were not assigned an auto-identification, and 1,041 WAV files were classified as noise. Six (6) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of forty-nine (49) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and thirty (30) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (66 WAV files)
- Eastern red bat (12 WAV files)
- Hoary bat (364 WAV files)
- Northern yellow bat (56 WAV files)
- Seminole bat (69 WAV files)
- Southeastern myotis (7 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (37 WAV files)
- Brazilian free-tailed bat (955 WAV files)
- **Florida bonneted bat (6 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (49 WAV files with confirmed 30 WAV files)**

Acoustic Survey Station 7

Station 7 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 10,027 WAV files were recorded, and of these, 5,642 WAV files were auto-identified to the species level, 2,824 WAV files were not assigned an auto-identification, and 1,561 WAV files were classified as noise. Nine (9) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and one (1) was confirmed to be a Florida bonneted bat echolocation. A total of one hundred and three (103) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and ninety-eight (98) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (1,432 WAV files)
- Eastern red bat (211 WAV files)
- Hoary bat (444 WAV files)
- Northern yellow bat (245 WAV files)
- Seminole bat (304 WAV files)

- Southeastern myotis (8 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (1,672 WAV files)
- Brazilian free-tailed bat (1,214 WAV files)
- **Florida bonneted bat (9 WAV files with 1 confirmed WAV files)**
- **Tricolored bat (103 WAV files with confirmed 98 WAV files)**

Acoustic Survey Station 8

Station 8 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 5,631 WAV files were recorded, and of these, 3,318 WAV files were auto-identified to the species level, 1,349 WAV files were not assigned an auto-identification, and 964 WAV files were classified as noise. Twenty (20) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and three (3) were confirmed to be Florida bonneted bat echolocations. A total of thirteen (13) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and twelve (12) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (168 WAV files)
- Eastern red bat (59 WAV files)
- Hoary bat (556 WAV files)
- Northern yellow bat (356 WAV files)
- Seminole bat (149 WAV files)
- Southeastern myotis (12 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (205 WAV files)
- Brazilian free-tailed bat (1,780 WAV files)
- **Florida bonneted bat (20 WAV files with 3 confirmed WAV files)**
- **Tricolored bat (13 WAV files with confirmed 12 WAV files)**

Acoustic Survey Station 9

Station 9 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 18,019 WAV files were recorded, and of these, 10,663 WAV files were auto-identified to the species level, 5,571 WAV files were not assigned an auto-identification, and 1,785 WAV files were classified as noise. Eighty (80) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and three (3) were confirmed to be Florida bonneted bat echolocations. A total of twenty-nine (29) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and twenty-five (25) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (770 WAV files)
- Eastern red bat (108 WAV files)
- Hoary bat (2,146 WAV files)
- Northern yellow bat (426 WAV files)
- Seminole bat (302 WAV files)
- Southeastern myotis (17 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (506 WAV files)
- Brazilian free-tailed bat (6,279 WAV files)
- **Florida bonneted bat (80 WAV files with 3 confirmed WAV files)**
- **Tricolored bat (29 WAV files with confirmed 25 WAV files)**

Acoustic Survey Station 10

Station 10 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 9,253 WAV files were recorded, and of these, 4,417 WAV files were auto-identified to the species level, 2,411 WAV files were not assigned an auto-identification, and 2,425 WAV files were classified as noise. Seven (7) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and two (2) were confirmed to be Florida bonneted bat echolocations. A total of thirty-four (34) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and twenty-one (21) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (110 WAV files)
- Eastern red bat (77 WAV files)
- Hoary bat (473 WAV files)
- Northern yellow bat (218 WAV files)
- Seminole bat (693 WAV files)
- Southeastern myotis (1 WAV file)
- Northern long-eared bat (1 WAV file)
- Evening bat (270 WAV files)
- Brazilian free-tailed bat (2,533 WAV files)
- **Florida bonneted bat (7 WAV files with 2 confirmed WAV files)**
- **Tricolored bat (34 WAV files with confirmed 21 WAV files)**

Acoustic Survey Station 11

Station 11 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 14,861 WAV files were recorded, and of these, 7,099 WAV files were auto-identified to the species level, 3,391 WAV files were not assigned an auto-identification, and 4,371 WAV files were classified as noise. Twenty-six (26) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and three (3) were confirmed to be Florida bonneted bat echolocations. A total of ten (10) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and nine (9) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (307 WAV files)
- Eastern red bat (25 WAV files)
- Hoary bat (2,338 WAV files)
- Northern yellow bat (219 WAV files)
- Seminole bat (313 WAV files)
- Southeastern myotis (27 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat 196 WAV files)
- Brazilian free-tailed bat (3,638 WAV files)
- **Florida bonneted bat (26 WAV files with 3 confirmed WAV files)**
- **Tricolored bat (10 WAV files with confirmed 9 WAV files)**

Acoustic Survey Station 12

Station 12 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 6,611 WAV files were recorded, and of these, 3,750 WAV files were auto-identified to the species level, 1,922 WAV files were not assigned an auto-identification, and 939 WAV files were classified as noise. Two (2) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of seven (7) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and six (6) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (214 WAV files)
- Eastern red bat (88 WAV files)
- Hoary bat (590 WAV files)
- Northern yellow bat (130 WAV files)
- Seminole bat (392 WAV files)
- Southeastern myotis (2 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (170 WAV files)

- Brazilian free-tailed bat (2,155 WAV files)
- **Florida bonneted bat (2 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (7 WAV files with confirmed 6 WAV files)**

Acoustic Survey Station 13

Station 13 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 11,962 WAV files were recorded, and of these, 5,730 WAV files were auto-identified to the species level, 2,142 WAV files were not assigned an auto-identification, and 4,090 WAV files were classified as noise. Eleven (11) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of six (6) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and all were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (115 WAV files)
- Eastern red bat (1 WAV file)
- Hoary bat (1,367 WAV files)
- Northern yellow bat (87 WAV files)
- Seminole bat (44 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (25 WAV files)
- Brazilian free-tailed bat (4,074 WAV files)
- **Florida bonneted bat (11 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (6 WAV files with confirmed 6 WAV files)**

Acoustic Survey Station 14

Station 14 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 4,757 WAV files were recorded, and of these, 1,223 WAV files were auto-identified to the species level, 355 WAV files were not assigned an auto-identification, and 3,179 WAV files were classified as noise. Ninety-nine (99) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. One (1) WAV file was auto-identified as containing tricolored bat echolocations. This WAV file was manually inspected and all were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (11 WAV files)

- Eastern red bat (0 WAV files)
- Hoary bat (340 WAV files)
- Northern yellow bat (3 WAV files)
- Seminole bat (17 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (10 WAV files)
- Brazilian free-tailed bat (742 WAV files)
- **Florida bonneted bat (99 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (1 WAV file with confirmed 1 WAV file)**

Acoustic Survey Station 15

Station 15 was surveyed from May 14-26, 2025. The nights with acceptable weather conditions were May 14-20, 22, 24-25, 2025.

A total of 6,829 WAV files were recorded and, of these, 3,406 WAV files were auto-identified to the species level, 1,468 WAV files were not assigned an auto-identification, and 1,955 WAV files were classified as noise. Five (5) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and one (1) was confirmed to be a Florida bonneted bat echolocation. A total of six (6) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and five (5) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (183 WAV files)
- Eastern red bat (18 WAV files)
- Hoary bat (503 WAV files)
- Northern yellow bat (177 WAV files)
- Seminole bat (142 WAV files)
- Southeastern myotis (11 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (98 WAV files)
- Brazilian free-tailed bat (2,263 WAV files)
- **Florida bonneted bat (5 WAV files with 1 confirmed WAV file)**
- **Tricolored bat (6 WAV files with confirmed 5 WAV files)**

Acoustic Survey Station 16

Station 16 was surveyed from April 22 through May 13, 2025. The nights with acceptable weather conditions were April 25-26 and 30, May 2, 4, 7, 8, 10, and 12, 2025.

A total of 7,367 WAV files were recorded and, of these, 2,139 WAV files were auto-identified to the species level, 968 WAV files were not assigned an auto-identification, and 4,260 WAV files were classified as noise. Four (4) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of five (5) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and four (4) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (160 WAV files)
- Eastern red bat (11 WAV files)
- Hoary bat (466 WAV files)
- Northern yellow bat (150 WAV files)
- Seminole bat (49 WAV files)
- Southeastern myotis (5 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (12 WAV files)
- Brazilian free-tailed bat (1,277 WAV files)
- **Florida bonneted bat (4 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (5 WAV files with confirmed 4 WAV files)**

Acoustic Survey Station 17

Station 17 was surveyed from April 22 through May 13, 2025. The nights with acceptable weather conditions were April 25-26 and 30, May 2, 4, 7, 8, 10, and 12, 2025.

A total of 8,756 WAV files were recorded and, of these, 4,911 WAV files were auto-identified to the species level, 1,592 WAV files were not assigned an auto-identification, and 2,253 WAV files were classified as noise. Ten (10) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of eight (8) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and three (3) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (154 WAV files)
- Eastern red bat (10 WAV files)
- Hoary bat (2,032 WAV files)
- Northern yellow bat (90 WAV files)
- Seminole bat (43 WAV files)
- Southeastern myotis (0 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (20 WAV files)
- Brazilian free-tailed bat (2,544 WAV files)

- **Florida bonneted bat (10 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (8 WAV files with confirmed 3 WAV files)**

Acoustic Survey Station 18

Station 18 was surveyed from April 22 through May 13, 2025. The nights with acceptable weather conditions were April 25-26 and 30, May 2, 4, 7, 8, 10, and 12, 2025.

A total of 15,150 WAV files were recorded, and of these, 4,941 WAV files were auto-identified to the species level, 1,986 WAV files were not assigned an auto-identification, and 8,223 WAV files were classified as noise. Six (6) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and one (1) was confirmed to be a Florida bonneted bat echolocation. A total of seventeen (17) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and fifteen (15) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (249 WAV files)
- Eastern red bat (137 WAV files)
- Hoary bat (1,430 WAV files)
- Northern yellow bat (205 WAV files)
- Seminole bat (41 WAV files)
- Southeastern myotis (4 WAV files)
- Northern long-eared bat (1 WAV file)
- Evening bat (75 WAV files)
- Brazilian free-tailed bat (2,776 WAV files)
- **Florida bonneted bat (6 WAV files with 1 confirmed WAV file)**
- **Tricolored bat (17 WAV files with confirmed 15 WAV files)**

Acoustic Survey Station 19

Station 19 was surveyed from April 22 through May 13, 2025. The nights with acceptable weather conditions were April 25-26 and 30, May 2, 4, 7, 8, 10, and 12, 2025.

A total of 6,998 WAV files were recorded, and of these, 3,782 WAV files were auto-identified to the species level, 1,835 WAV files were not assigned an auto-identification, and 1,381 WAV files were classified as noise. Thirteen (13) WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and none were confirmed to be Florida bonneted bat echolocations. A total of sixty-six (66) WAV files were auto-identified as containing tricolored bat echolocations. These WAV files were manually inspected and sixty-four (64) were confirmed to be at least potentially tricolored bat echolocations.

The following is a summary of the auto-identification data:

- Big brown bat (320 WAV files)

- Eastern red bat (185 WAV files)
- Hoary bat (561 WAV files)
- Northern yellow bat (537 WAV files)
- Seminole bat (114 WAV files)
- Southeastern myotis (46 WAV files)
- Northern long-eared bat (0 WAV files)
- Evening bat (176 WAV files)
- Brazilian free-tailed bat (1,764 WAV files)
- **Florida bonneted bat (13 WAV files with 0 confirmed WAV files)**
- **Tricolored bat (66 WAV files with confirmed 64 WAV files)**

Conclusions

A total of 159,946 WAV files were recorded at the nineteen (19) survey stations during Florida bonneted bat and tricolored bat acoustic surveys for the proposed SR 70 PD&E Study from Jefferson Avenue to CR 29. Of those, 337 WAV files were auto-identified by Kaleidoscope Pro as containing Florida bonneted bat echolocations and 619 containing tricolored bat echolocations.

Biologists manually verified each of the 337 auto-identified Florida bonneted bat WAV files and all files with frequencies between 8 kHz and 25 kHz classified by Kaleidoscope Pro as “No ID.” As a result, it was found that fourteen (14) of the files contained echolocations from the Florida bonneted bat. The misidentified Florida bonneted bat files were mainly identified as noise (potentially from vehicular traffic, insects, or birds). Tabular results of the acoustic survey with station locations are presented in **Figure 3. Appendix F** includes a table with the positive Florida bonneted bat WAV files, examples of calls that were positively identified as Florida bonneted bat WAV files, and examples of the calls that were misclassified as Florida bonneted bat echolocations. All confirmed echolocations were considered to be search phase calls.

Two (2) of the 14 calls were recorded within 1.5 hours after sunset or before 1.5 hours before sunrise. According to the USFWS 2019 Florida Bonneted Bat Consultation Guidelines roosting is likely. However, based on the overall low instances of both overall calls and those occurring in the roosting window, it is unlikely that Florida bonneted bats are roosting in the areas, and further discussions are warranted on the matter during consultation with the USFWS.

Per guidance from the FDOT’s OEM, the Florida Bonneted Bat Consultation Key, included in the USFWS 2019 Florida Bonneted Bat Consultation Guidelines, was used to evaluate potential effects to the species from the SR 70 PD&E Study. In order to utilize the key, the potential impact to Florida bonneted bat roosting and foraging habitat needed to be evaluated for the project. Based on the proposed roadway improvements to the SR 70 corridor, greater than 25 acres of roosting and foraging habitat is proposed to be impacted. As a result, the progression through the key was 1a → 2a → 3b → 6a → 7a → 8b, resulting in an effect determination of May Affect, and is Likely to Adversely Affect (LAA)⁺ for the Florida bonneted bat and further consultation with the USFWS is required as shown in **Appendix G**. As a result, coordination with the USFWS is needed to further evaluate the potential impacts of the project to the Florida bonneted bat, as well as the appropriate BMPs, compensatory mitigation, and/or compensation activities (e.g., contributions to the USFWS Florida bonneted bat conservation fund).

Biologists manually verified each of the 619 auto-identified tricolored bat WAV files and it was found that 490 files contain echolocations from the tricolored bat. If a station were to have had zero auto-identified tricolored bat WAV files, all files classified by Kaleidoscope Pro as "No ID" that had a minimum frequency above 35 kHz and a characteristic frequency less than 50 kHz would have been manually reviewed to verify an absence of tricolored bat calls. Tabular results of the acoustic survey with station locations are presented in **Figure 3. Appendix F** includes examples of calls that were positively identified as tricolored bat WAV files and examples of the calls that were misclassified as tricolored bat echolocations.

Currently, there is no Consultation Key for the tricolored bat, which would provide guidance to determine if roosting activity is likely for the species. However, based on the results of the acoustic survey data analysis, it was confirmed that tricolored bats are present within the project area. If the tricolored bat is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to reinitiating consultation with the USFWS to determine appropriate avoidance and minimization measures.

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Figures

Figure 1 Project Location

Figure 2 Florida Bonneted Bat and Tricolored Bat Acoustic Survey
Detector Locations Map

Figure 3 Florida Bonneted Bat and Tricolored Bat Acoustic Survey
Detector Results Map

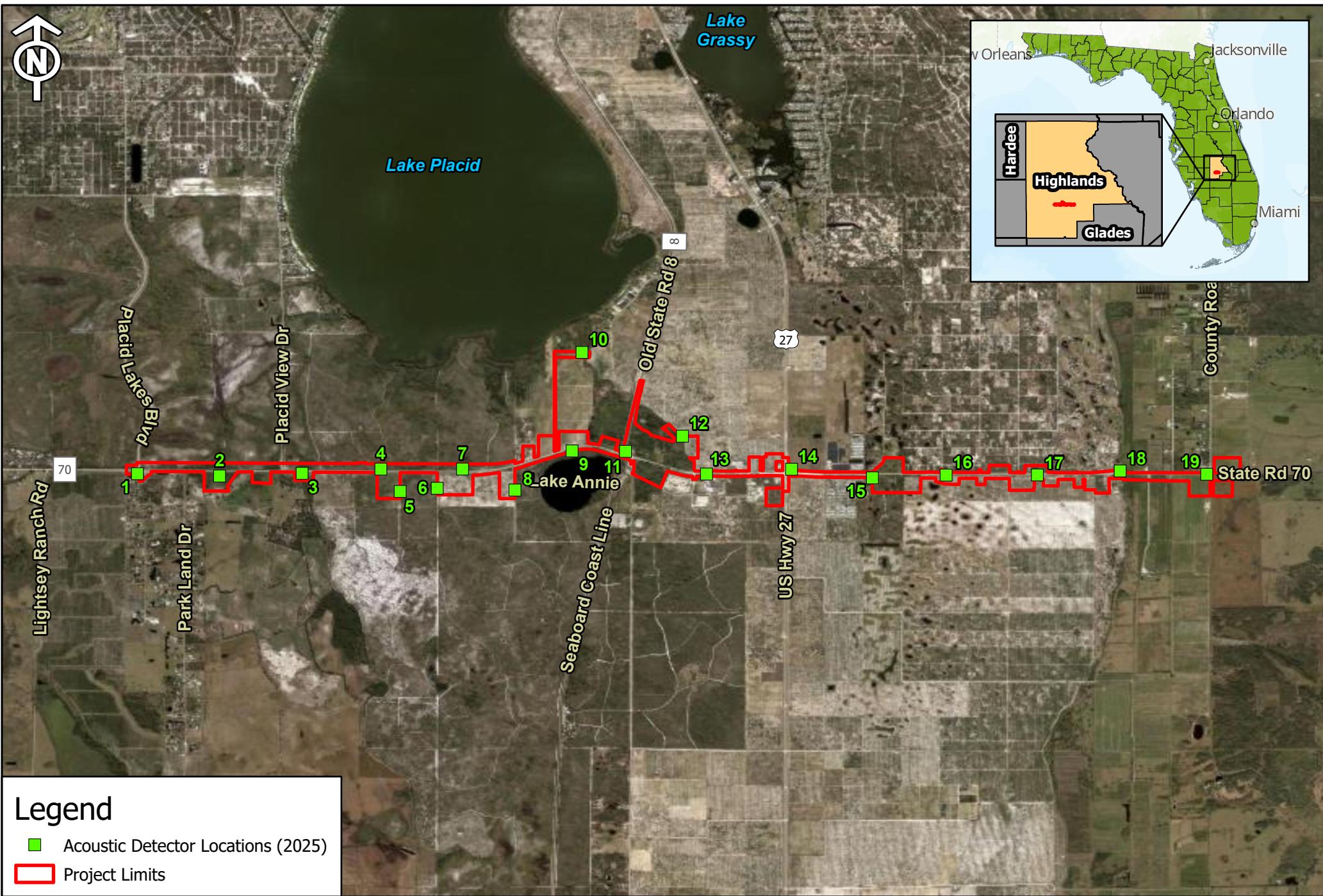


Figure 1 - Project Location

SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

0 1 2 Miles



70 State Rd 70

Placid/Lakes Blvd

Placid View Dr

Park Land Dr

Legend

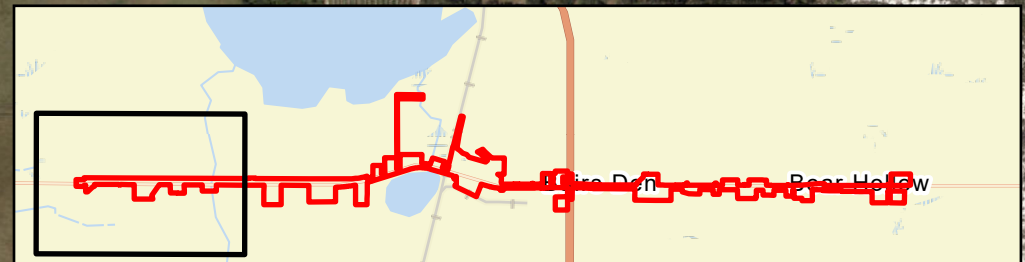
- Acoustic Detector Locations (2025)
- Project Limits

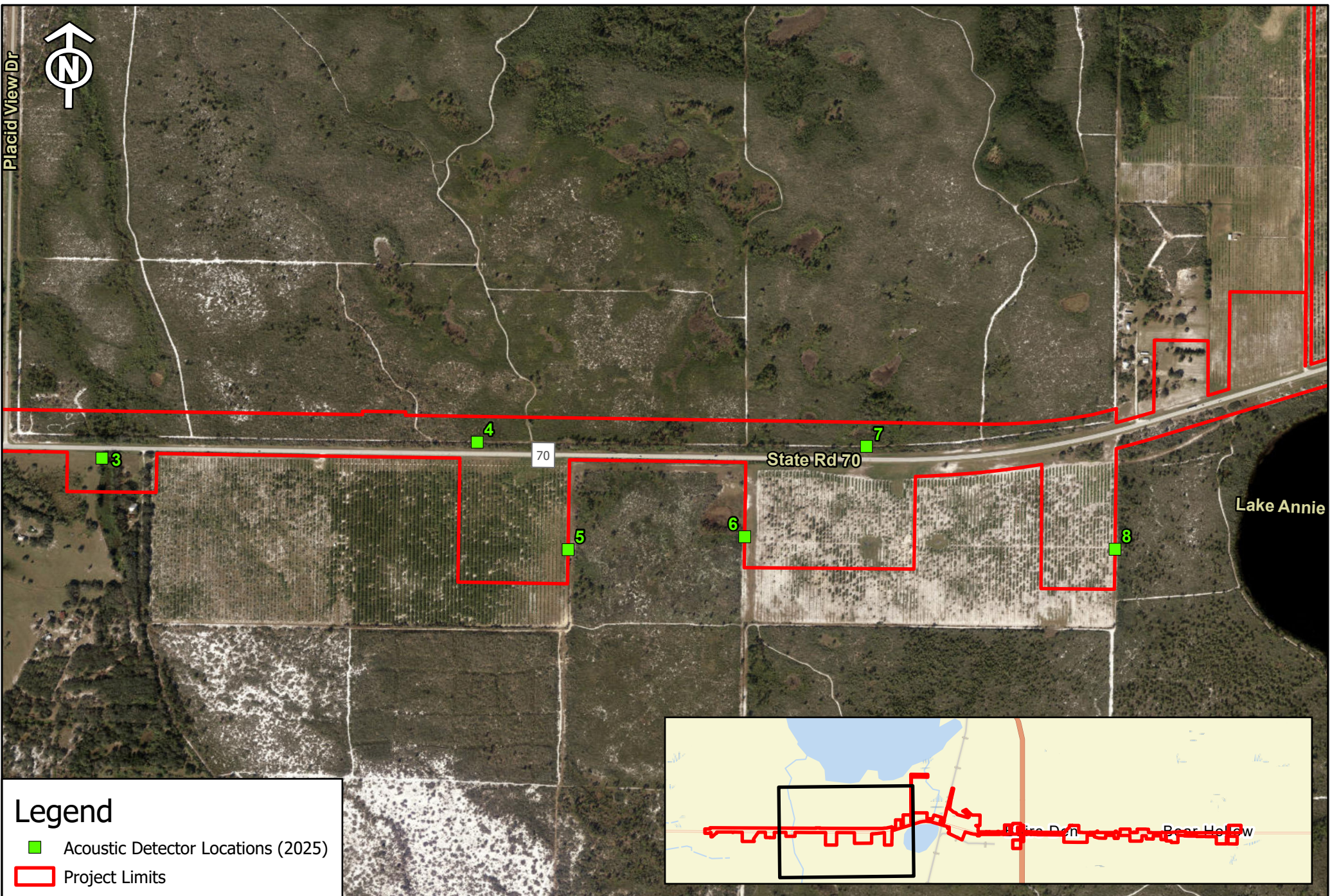


**Figure 2-1 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Locations Map**

SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

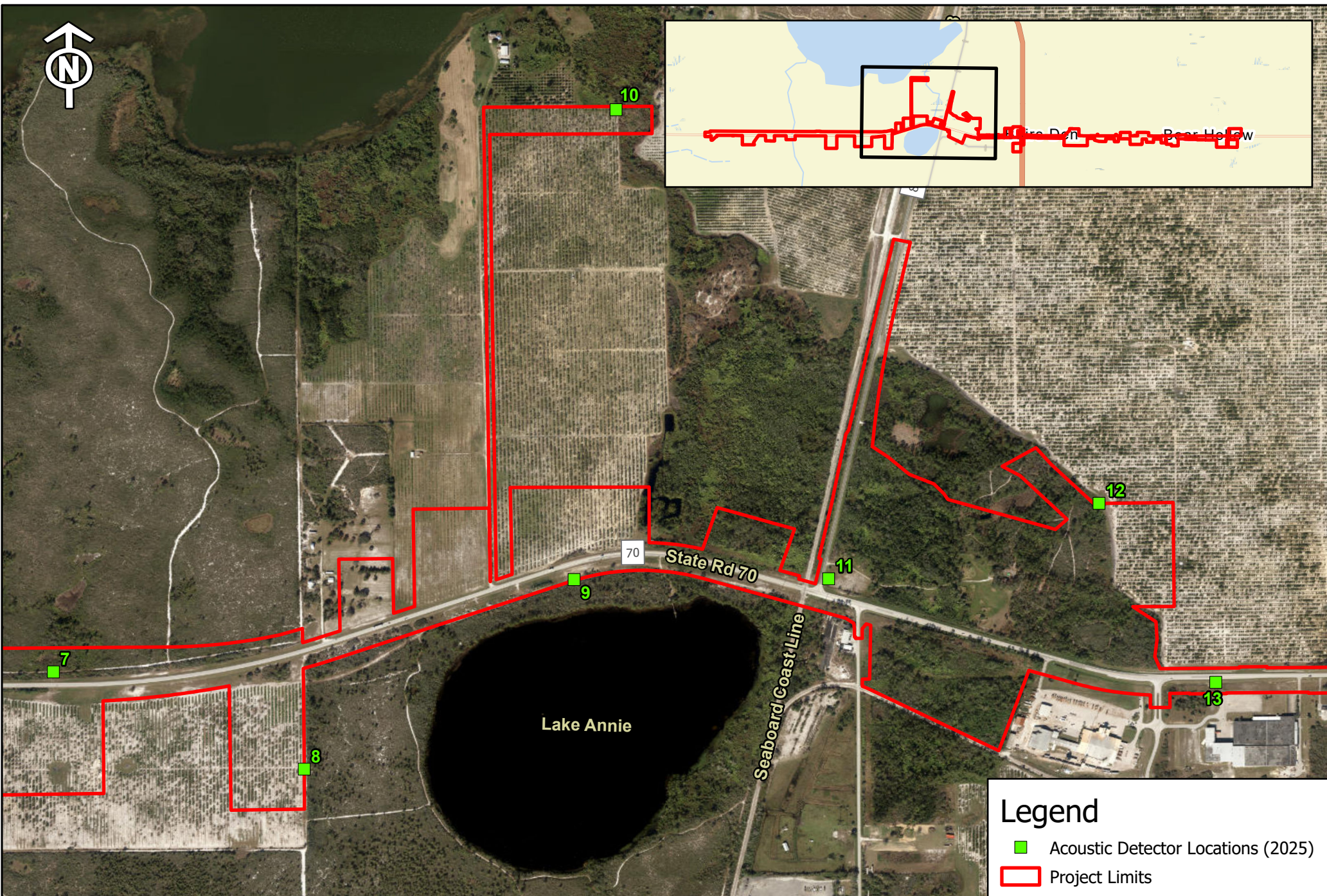
0 0.4 Miles





**Figure 2-2 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Locations Map**
SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida



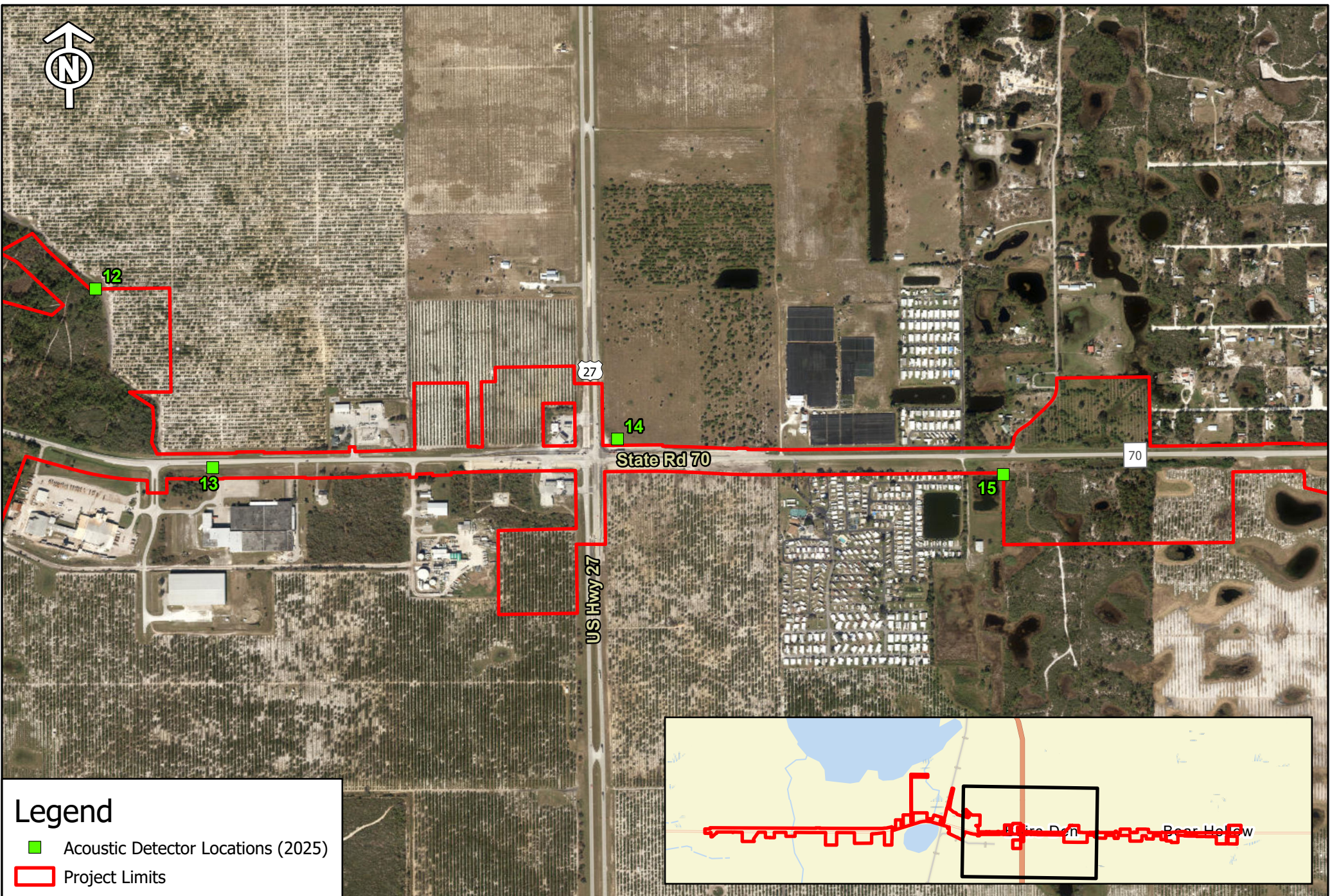


**Figure 2-3 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Locations Map**

SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida



0 0.4 Miles



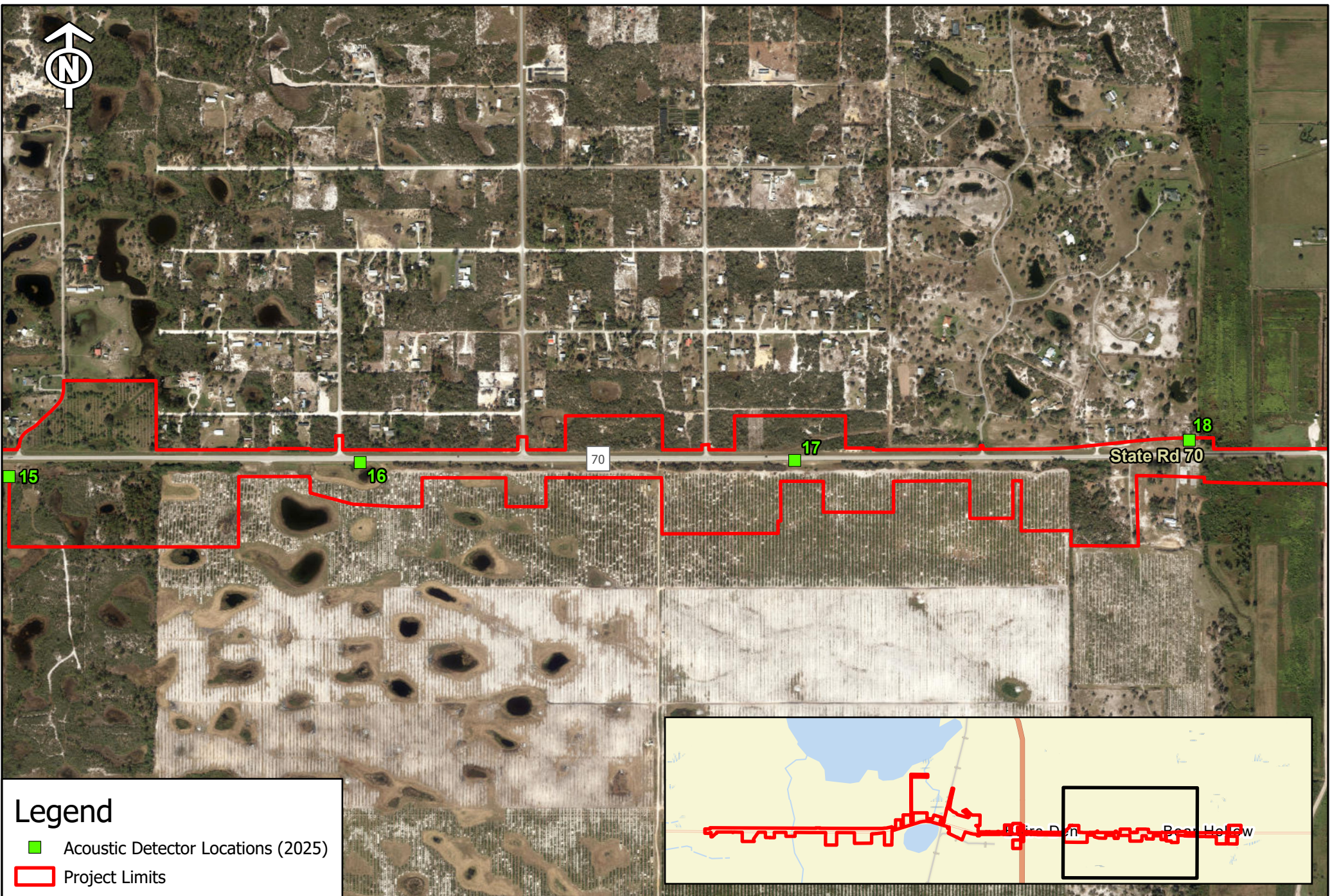
Legend

- Acoustic Detector Locations (2025)
- ▭ Project Limits



**Figure 2-4 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Locations Map**
SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

0 0.4 Miles



Legend

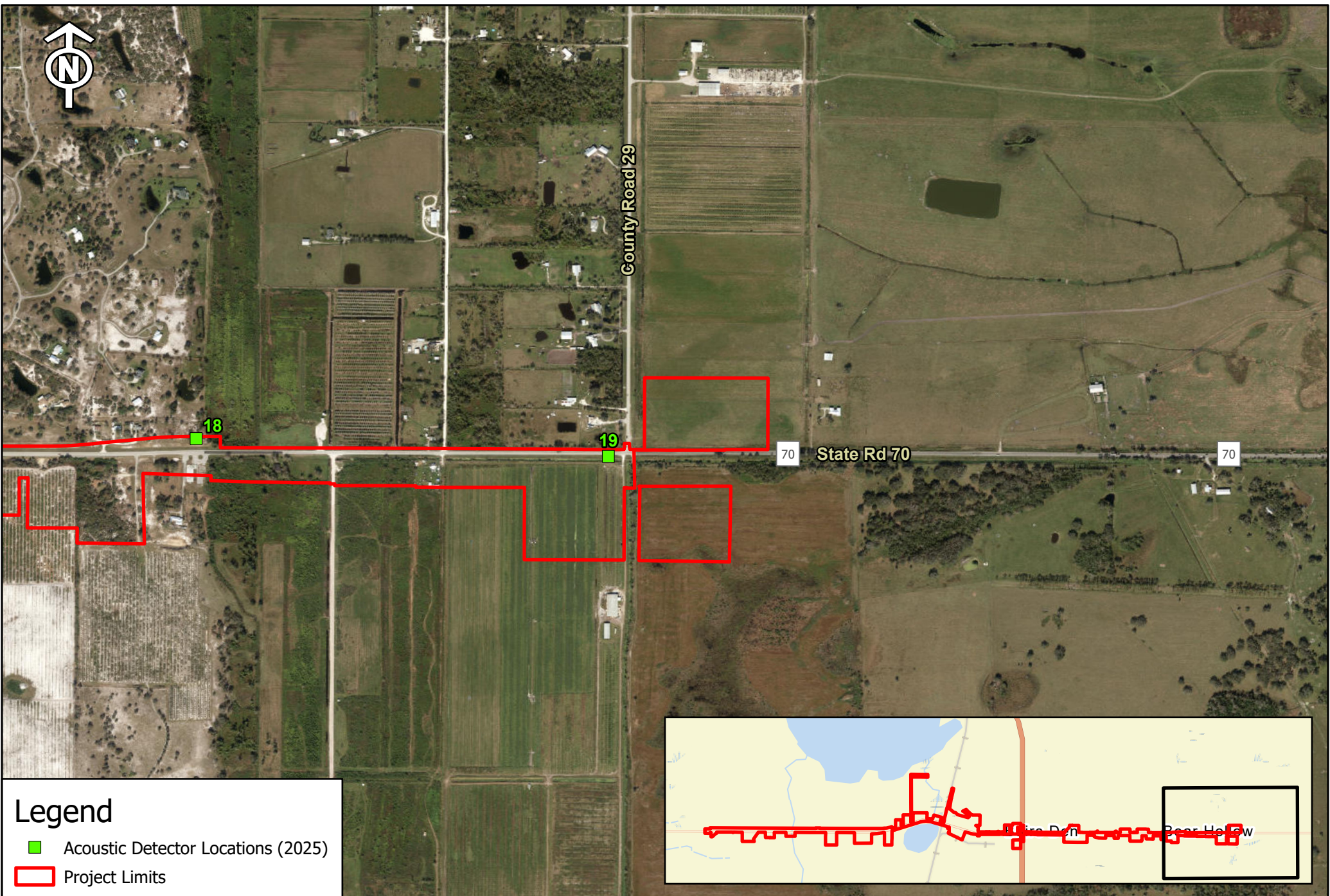
- Acoustic Detector Locations (2025)
- ▭ Project Limits



**Figure 2-5 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Locations Map**

SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

0 0.4 Miles



Legend

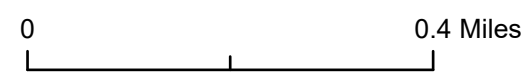
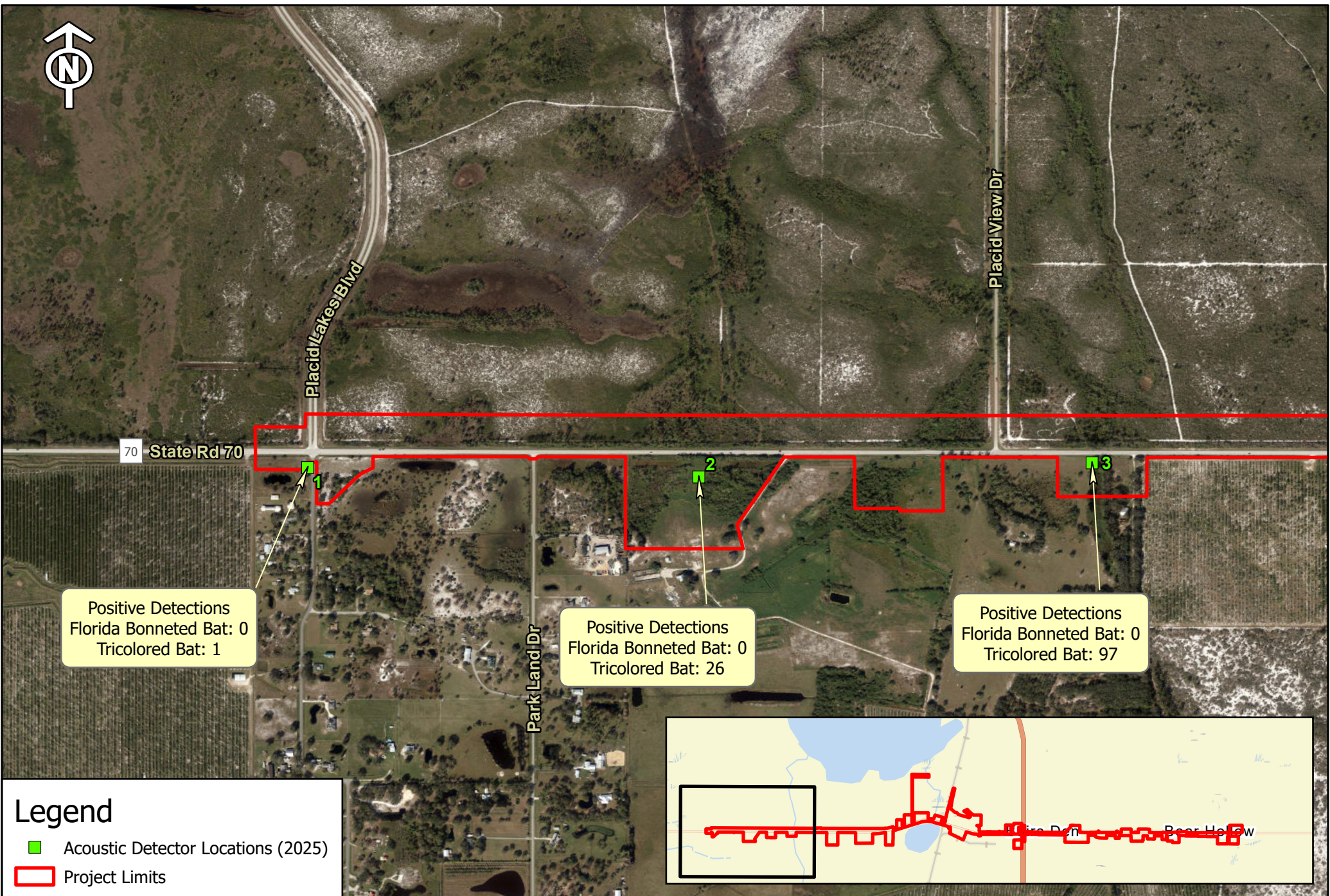
- Acoustic Detector Locations (2025)
- ▭ Project Limits

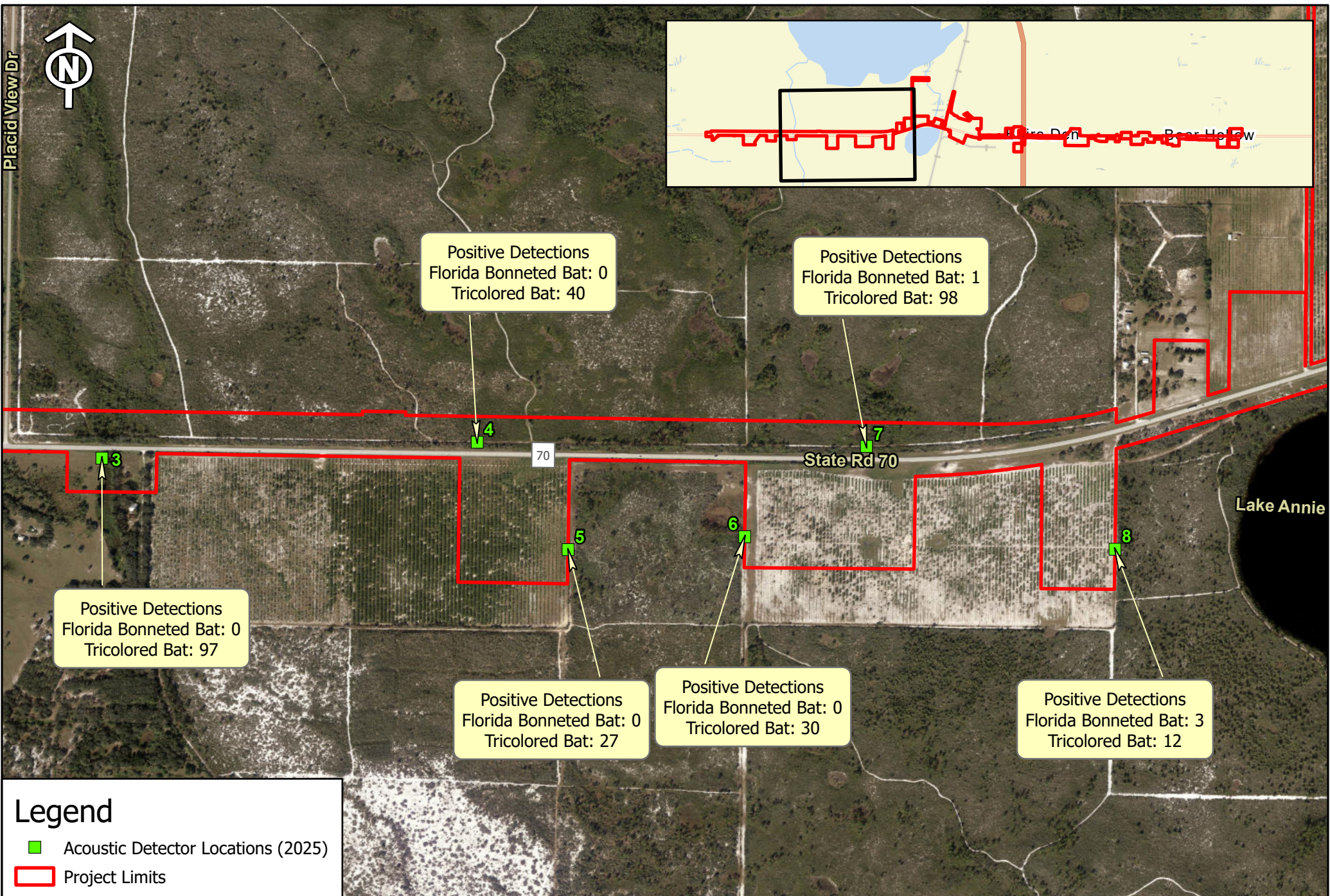


Figure 2-6 - Florida Bonneted Bat and Tricolored Bat Acoustic Survey Detector Locations Map

SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

0 0.4 Miles





**Figure 3-2 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Results Map**
SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

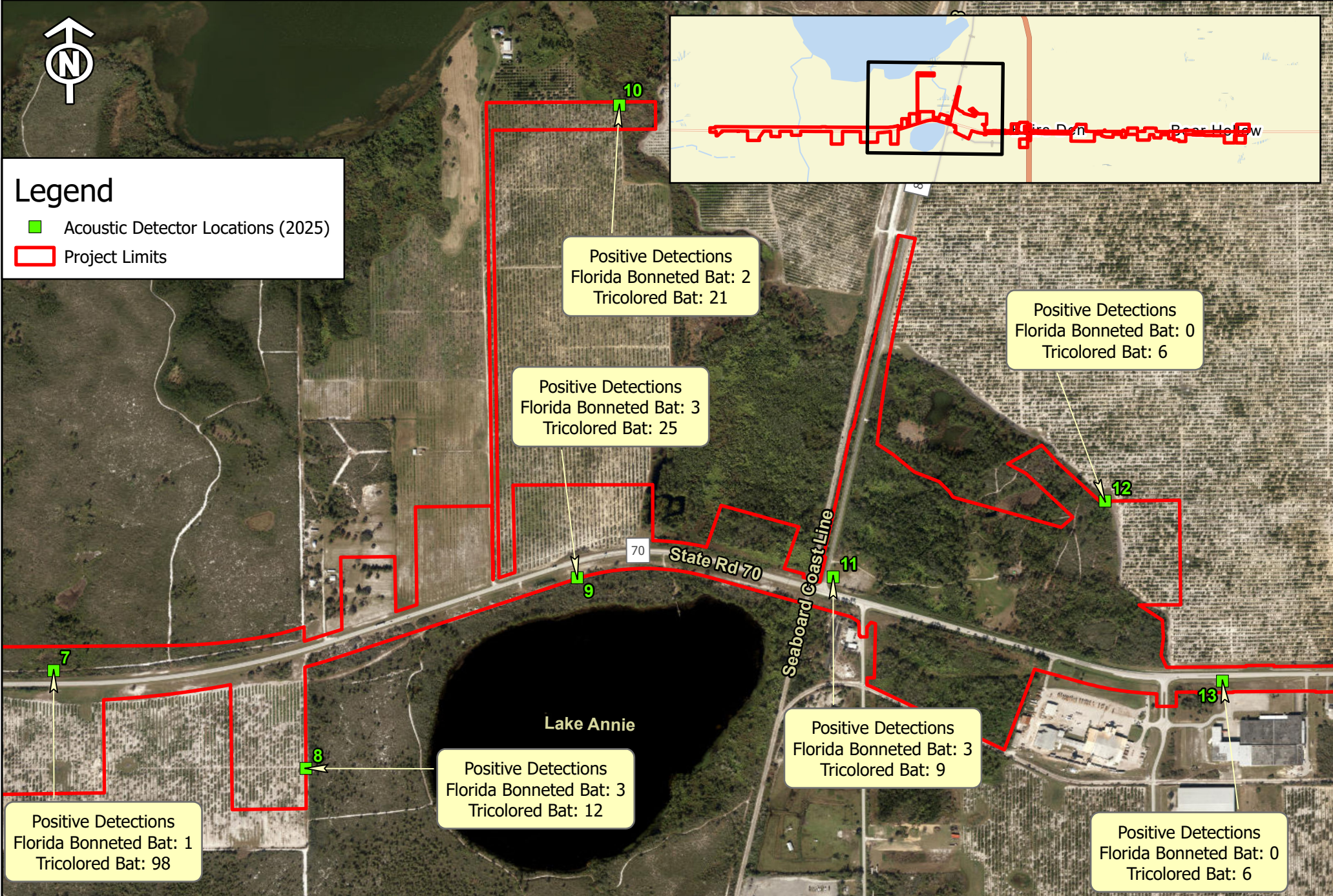
0 0.4 Miles



Legend

■ Acoustic Detector Locations (2025)

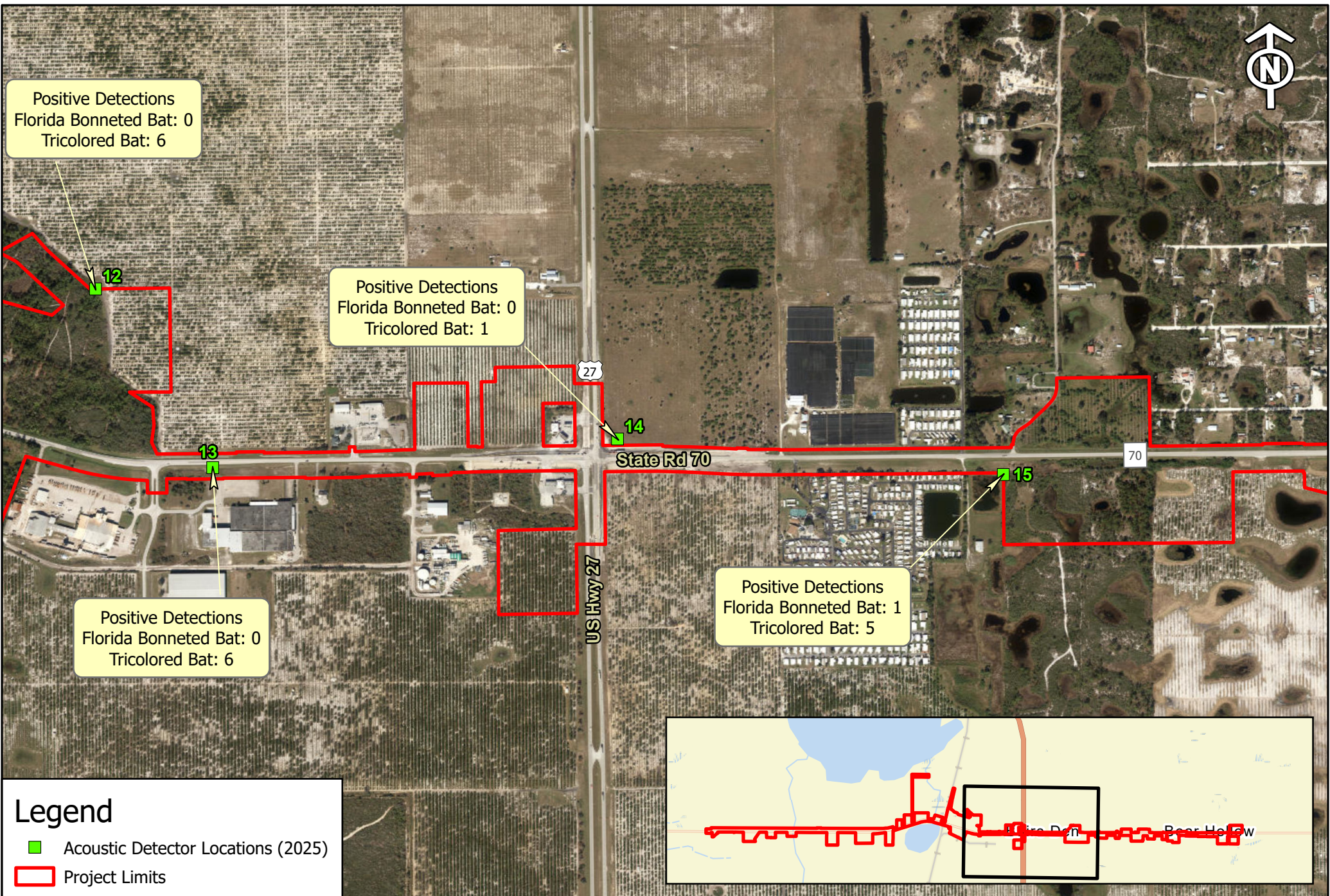
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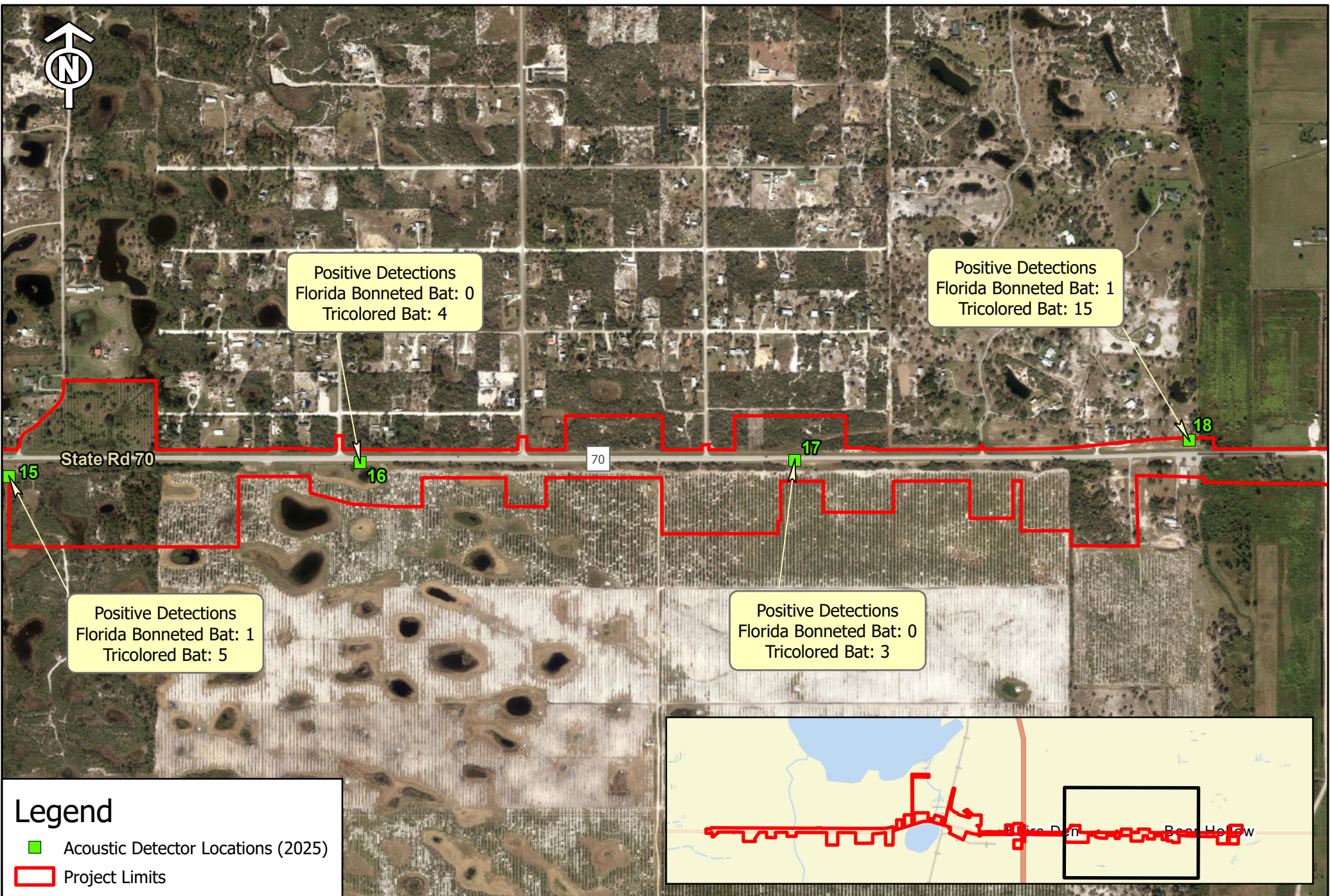


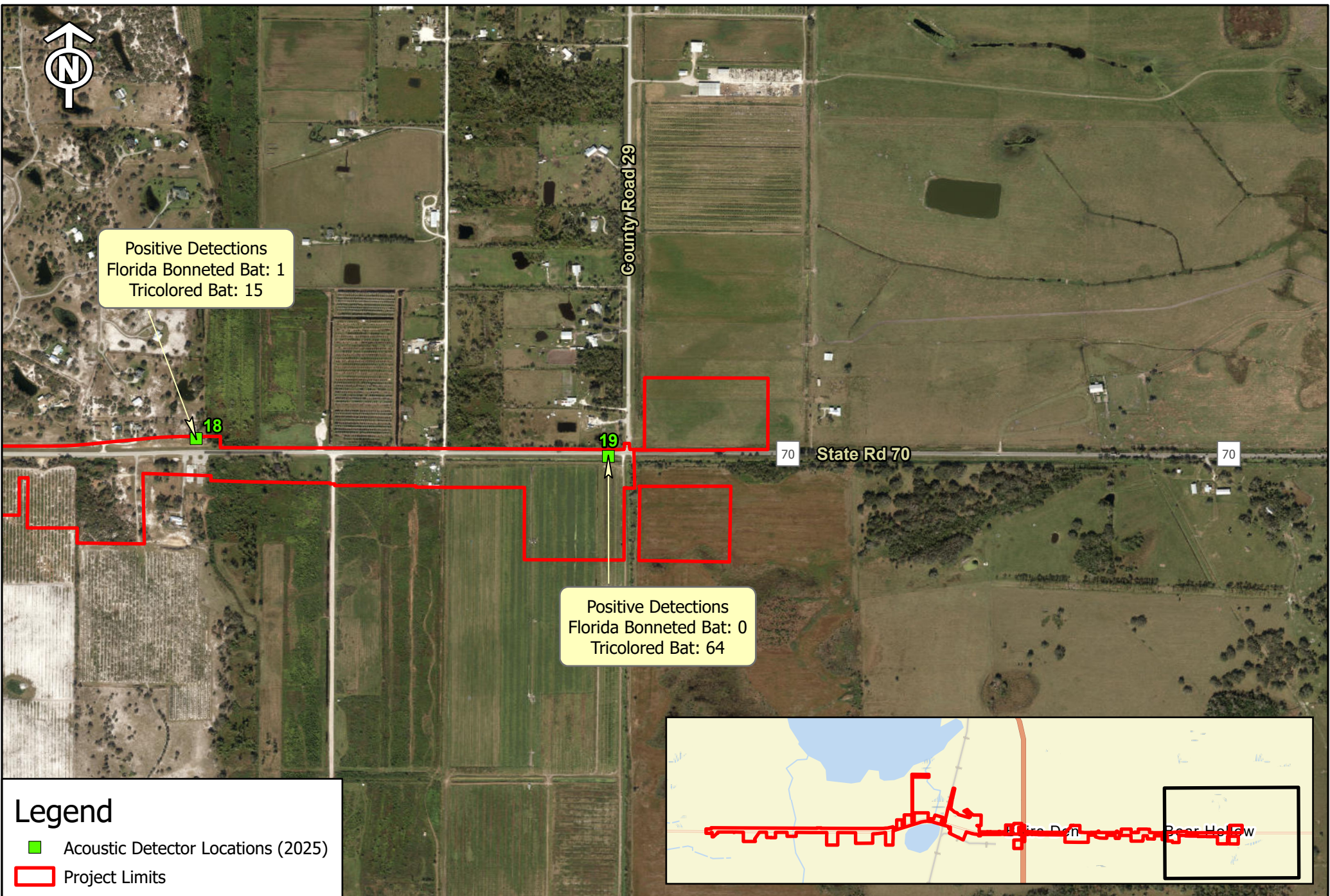
**Figure 3-3 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Results Map**

SR 70 from Jefferson Avenue to CR 29
FPID 414506-1-22-01
Highlands County, Florida

0 0.4 Miles







Appendix A

Survey Methodology Memorandum

memorandum

date March 17, 2025

to John Wrublik, U.S. Fish and Wildlife Service (USFWS)

cc Matthew Dockins, PE, HNTB Corporation
James Fine, HNTB Corporation
Tori Kuba, Environmental Science Associates

from Shannon Freemon, Environmental Science Associates

subject Florida Bonneted Bat and Tricolored Bat Acoustic Survey Methodology Memorandum
SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Highlands County, Florida

Introduction

This technical memorandum provides a summary of the proposed survey methodology to determine the potential for the presence of the federally endangered Florida bonneted bat (*Eumops floridanus*) and the federally proposed endangered tricolored bat (*Perimyotis subflavus*) within the limits of the SR 70 from Jefferson Avenue to CR 29 and SR 70 from CR 29 to Lonesome Island Road proposed project (**Figure 1**). The project is located within the U.S. Fish and Wildlife Service (USFWS) Consultation Area for the Florida bonneted bat and within the range for the tricolored bat. The Florida bonneted bat was federally designated as an endangered species by the USFWS in 2013 (78 Federal Register 61003 61043) and is protected by the Endangered Species Act, as amended (16 U.S. Code (U.S.C.) 1531-1544, 87 Stat. 884). Based on the availability of potential roosting and foraging habitat and the project's size being greater than five acres, a species-specific Florida bonneted bat acoustic survey was determined to be necessary for this project. The tricolored bat was proposed for listing as an endangered species in 2022 (87 Federal Register 56381 56393). Although not yet listed, due to the project's location in the tricolored bat range, results of the acoustic survey will be analyzed for the presence of tricolored bats in addition to Florida bonneted bats.

Preliminary Data Collection

A comprehensive literature and Geographic Information System (GIS) database search was conducted for the project area to determine if the Florida bonneted bat and/or tricolored bat was previously documented within the project limits and if suitable roosting or foraging habitat was available. The literature and database search included the following: 2017-2019 South Florida Water Management District (SFWMD) Land Use Land Cover spatial data, 2023 USFWS National Wetlands Inventory spatial data, 2024 USFWS Florida Bonneted Bat Consultation Guidelines, 2024 USFWS Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines, species-specific spatial data (i.e., range, critical habitat, etc.), and current aerial imagery.

Based on this preliminary protected species data collection effort, Florida bonneted bat and tricolored bat findings include the following:

- The project falls within the USFWS Florida bonneted bat Consultation Area (CA);
- The project does not fall within a USFWS Florida bonneted bat assumed presence polygon;
- The project does not fall within a USFWS Florida bonneted bat Critical Habitat (CH) polygon;
- The project falls within the USFWS range for the tricolored bat; and
- Potentially suitable foraging and roosting habitat was identified within the project boundary for both species.

Proposed Field Survey Methodology

The acoustic survey methodology outlined in the 2024 USFWS Florida Bonneted Bat Consultation Guidelines (USFWS 2024) for linear projects that contain potential roosting and foraging habitat will be followed for the Florida bonneted bat. While the 2024 USFWS Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines Appendix J Guidance for Surveying Year-Round Active Northern Long-eared Bats (USFWS 2024) is currently approved for use for the tricolored bat for FDOT by the USFWS, the survey requirements are generally less stringent than those required for the Florida bonneted bat. As a result, minimum requirements of the 2024 USFWS Florida Bonneted Bat Consultation Guidelines for linear projects will be adhered to. Survey results for the tricolored bat are valid only if conducted between March 1 and October 15. Based on the guidelines, the project mainline and ponds will require surveys for a minimum of nine (9) detector nights per 0.6 miles. A total of twenty-nine (29) acoustic monitoring stations were developed based on the guidelines, project length (approximately 8.4 miles), and evaluation of habitat within the project area. The proposed 19 acoustic monitoring station locations are depicted in the attached figure (**Figure 2**).

To maximize the detection of Florida bonneted and tricolored bats, each monitoring station will be placed in an area that could be used as a potential flight path for the bat species. This includes targeting areas which may provide potential roosting or foraging habitat such as a cluster of pine trees, a section of cypress swamp/dome, an area with snags, or a water feature. At each monitoring station, a Wildlife Acoustics Song Meter SM4BAT Full Spectrum (FS) acoustic detector will be deployed by qualified biologists who are trained and experienced in setting up, operating, and maintaining bat acoustic detection equipment. The detectors will be set to record 15-second file lengths and have a two-second trigger window based on training received from industry experts and the current 2024 USFWS Florida Bonneted Bat Consultation Guidelines. Each detector will be set to automatically begin collecting data continuously from 30 minutes before sunset to 30 minutes after sunrise for nine (9) consecutive nights at each station. If any of the following weather conditions exist during acoustic sampling, the time and duration will be noted and the acoustic sampling effort for that night repeated:

- Temperatures fall below 60°F during the first five (5) hours of the survey period;
- Precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first five (5) hours of the survey period; or
- Sustained wind speeds greater than nine (9) miles per hour for 30 minutes or more during the first five (5) hours of the survey period.

Per the 2024 guidelines, should it take longer than 14 days to attain the 9 valid nights, the Florida bonneted bat recovery lead will be contacted.

At each monitoring station, an omnidirectional Wildlife Acoustic SMM-U2 External Ultrasonic Microphone, placed on an extendable pole approximately 10 feet in height, will be deployed. A minimum distance of 300 meters will be maintained between deployed detectors. The microphone will be situated in an area clear of vegetation two (2) meters in all directions and be fully free of vegetative or other clutter from ground to sky. Microphones will be

directed away surrounding vegetation, from electrical wires and transmission lines, echo-producing surfaces including open water, and away from potential external noise sources. Metadata for each detector, consistent with the Acoustic Detector Deployment Example Data Sheet included in the 2024 USFWS Florida Bonneted Bat Consultation Guidelines, will be documented.

The Waveform Audio (WAV) files recorded at each monitoring station will be analyzed using Wildlife Acoustics Kaleidoscope Pro's latest version. The auto-identification parameters utilized via Kaleidoscope Pro include Bats of North America, region Florida, and the sensitivity setting utilized will be zero balanced (neutral). The species to be selected in the auto identification classifier include: big brown bat (*Eptesicus fuscus*), Florida bonneted bat, eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), Seminole bat (*Lasiurus seminolus*), southeastern myotis (*Myotis austroriparius*), northern myotis (*Myotis septentrionalis*), evening bat (*Nycticeius humeralis*), tricolored bat, silverhaired bat (*Lasionycteris noctivagans*), velvety free-tailed bat (*Molossus molossus*), gray myotis (*Myotis grisescens*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

The bat acoustic data will be retrieved, saved, analyzed, and interpreted by experienced qualified biologists who have taken one or more bat acoustic courses/workshops and who have also previously reviewed Florida bonneted bat and tricolored bat echolocations using Kaleidoscope Pro. All echolocations auto identified by Kaleidoscope Pro as being created by a Florida bonneted bat or tricolored bat will be visually reviewed and manually verified by experienced biologists. The parameters used to manually verify a sequence of echolocations as coming from a Florida bonneted bat include the following:

- Whether the characteristic frequency of echolocations fall within the documented range (10-25 kilohertz [kHz]) for the Florida bonneted bat,
- Whether there are three (3) or more echolocations where the time between echolocations remains consistent across the sequence of echolocations,
- Whether the minimum frequency remains consistent across the sequence of echolocations,
- Whether the slope and bandwidth remains consistent from echolocation to echolocation, and
- Whether there is good signal to noise ratio as evidenced by a crisp, clean oscillogram.

If a series of echolocations only meet some of these requirements, and they are within the characteristic frequency of the Florida bonneted bat, these echolocations will be classified as potentially coming from a Florida bonneted bat. The WAV files not assigned an auto identification and classified by Kaleidoscope Pro as "No ID" with signatures at or below 30 kHz will also manually reviewed to determine if they were misclassified and could contain Florida bonneted bat echolocations.

The parameters used to manually verify a sequence of echolocations as coming from a tricolored bat include the following:

- Whether the characteristic frequency of echolocations fall within the documented range (40-60 kHz with the call bottom frequency between 40-45 kHz) for the tricolored bat,
- Whether there are three (3) or more echolocations where the time between echolocations remains consistent across the sequence of echolocations,
- Whether the minimum frequency remains consistent across the sequence of echolocations,
- Whether the slope and bandwidth remains consistent from echolocation to echolocation, and
- Whether there is good signal to noise ratio as evidenced by a crisp, clean oscillogram.

If a series of echolocations only meet some of these requirements, and they are within the characteristic frequency of the tricolored bat, these echolocations will be classified as potentially coming from a tricolored bat. The WAV files not assigned an auto identification and classified by Kaleidoscope Pro as "No ID" with signatures 40-60 kHz will also manually reviewed to determine if they were misclassified and could contain tricolored bat echolocations.

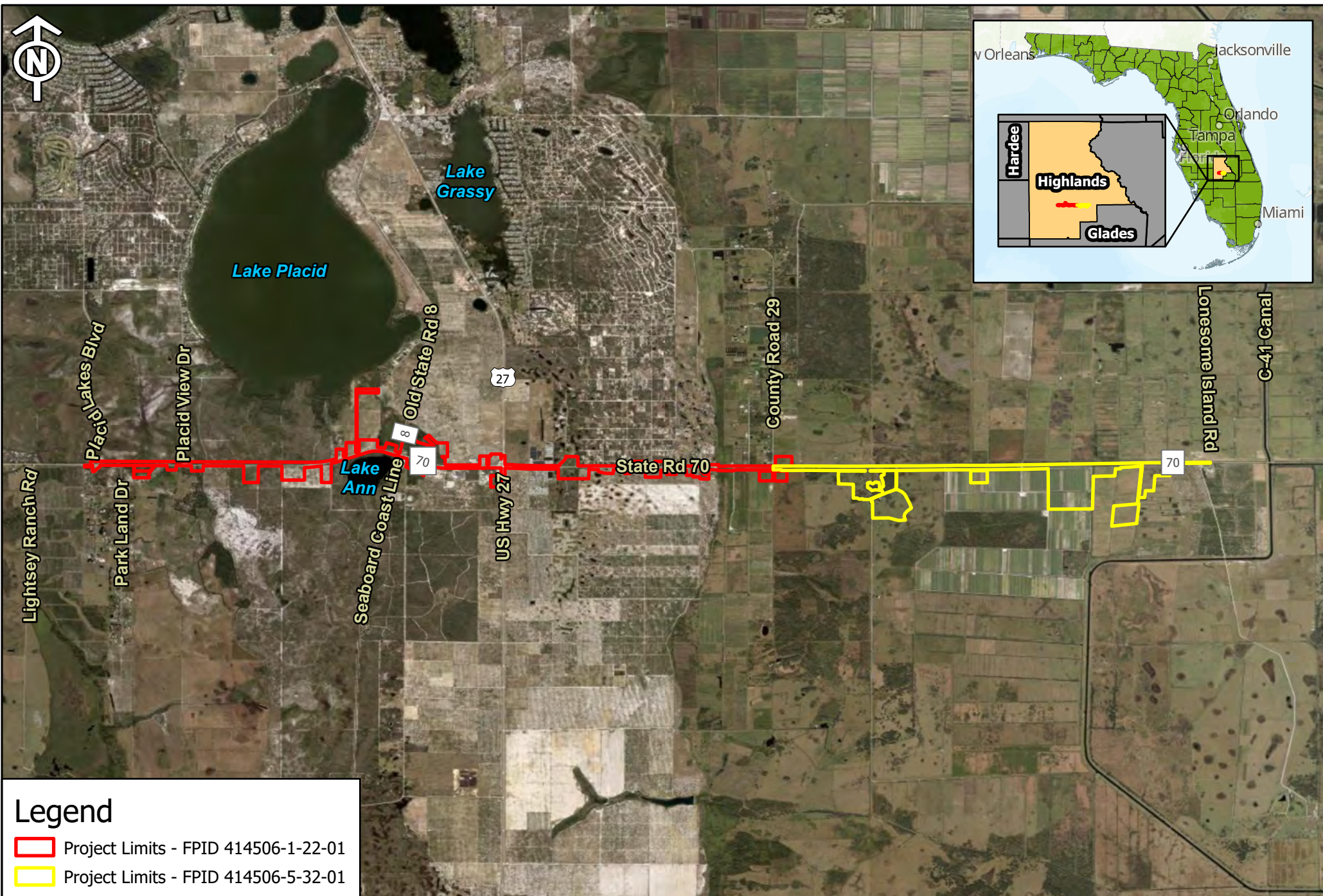
Per the 2024 USFWS Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines Appendix C Phase 2 Acoustic Surveys, qualitative analysis is necessary for the tricolored bat for linear projects when using an approved version of Kaleidoscope Pro if the maximum likelihood estimate (MLE) is > 0.05 for all site-nights and 10 or more passes are auto-classified as potentially belonging to tricolored bats at any site-night to reduce risk of false negatives.

The results of the Florida bonneted bat and tricolored bat call analysis will be assembled as required and uploaded into the NABat database. A report documenting the summary of the project, survey methods used, and survey results will be prepared following the survey. This will include an effect determination, explanation, and best management practices (BMPs) to be incorporated.

Figures

Figure 1 – Project Location

Figure 2 – Florida Bonneted Bat and Tricolored Bat Acoustic Survey
Detector Locations Map



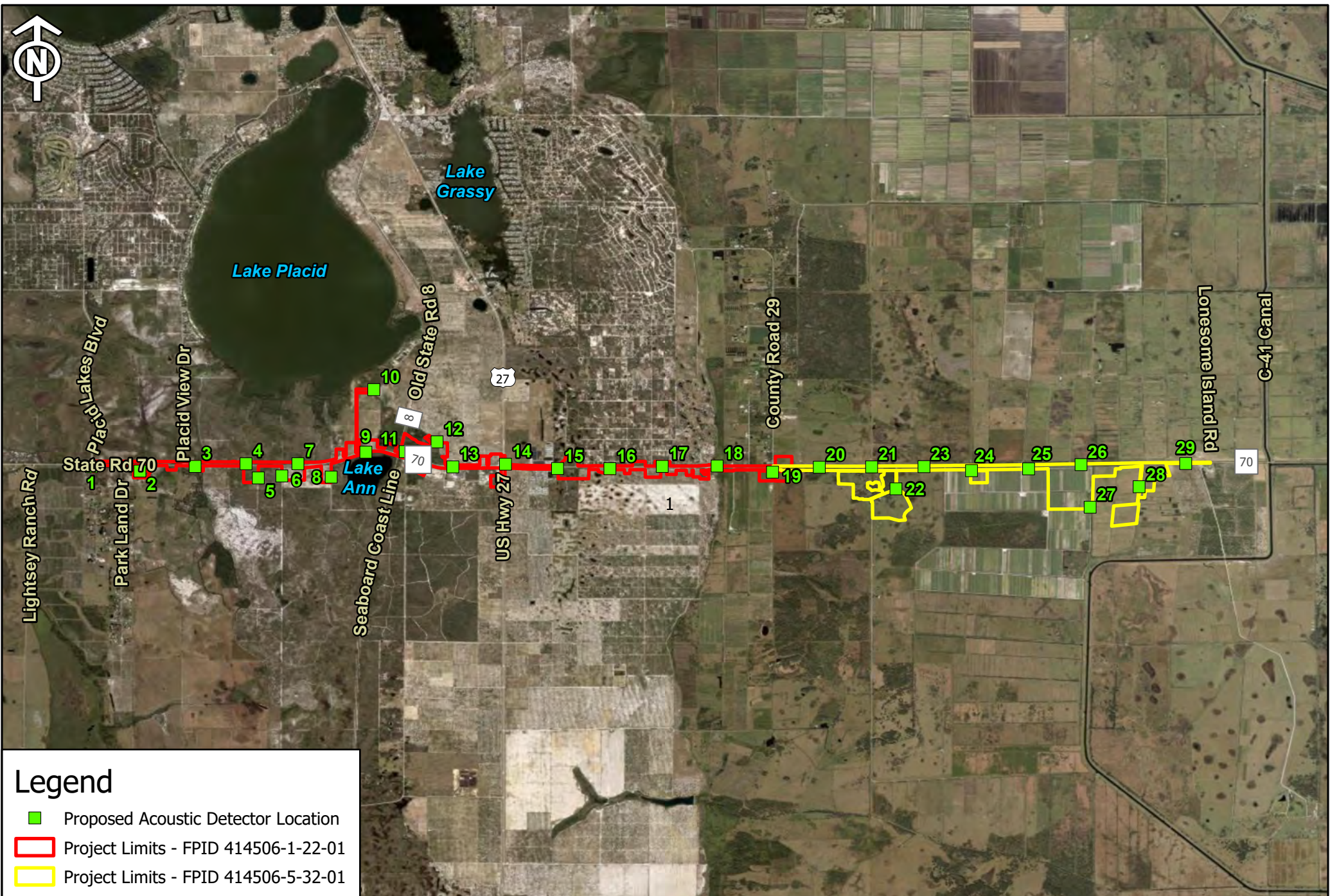
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-  Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
FPID 414506-1-22-01 & 414506-5-32-01
Figure 1 - Project Location





Legend

- Proposed Acoustic Detector Location
- ▭ Project Limits - FPID 414506-1-22-01
- ▭ Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-1 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map





Placid Lakes Blvd

70 State Rd 70

Park Land Dr

Legend

-  Proposed Acoustic Detector Location
-  Project Limits - FPID 414506-1-22-01
-  Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-2 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0 0.3 Miles





Placid View Dr

State Rd 70

70

3

4

5

3

Legend

-  Proposed Acoustic Detector Location
-  Project Limits - FPID 414506-1-22-01
-  Project Limits - FPID 414506-5-32-01

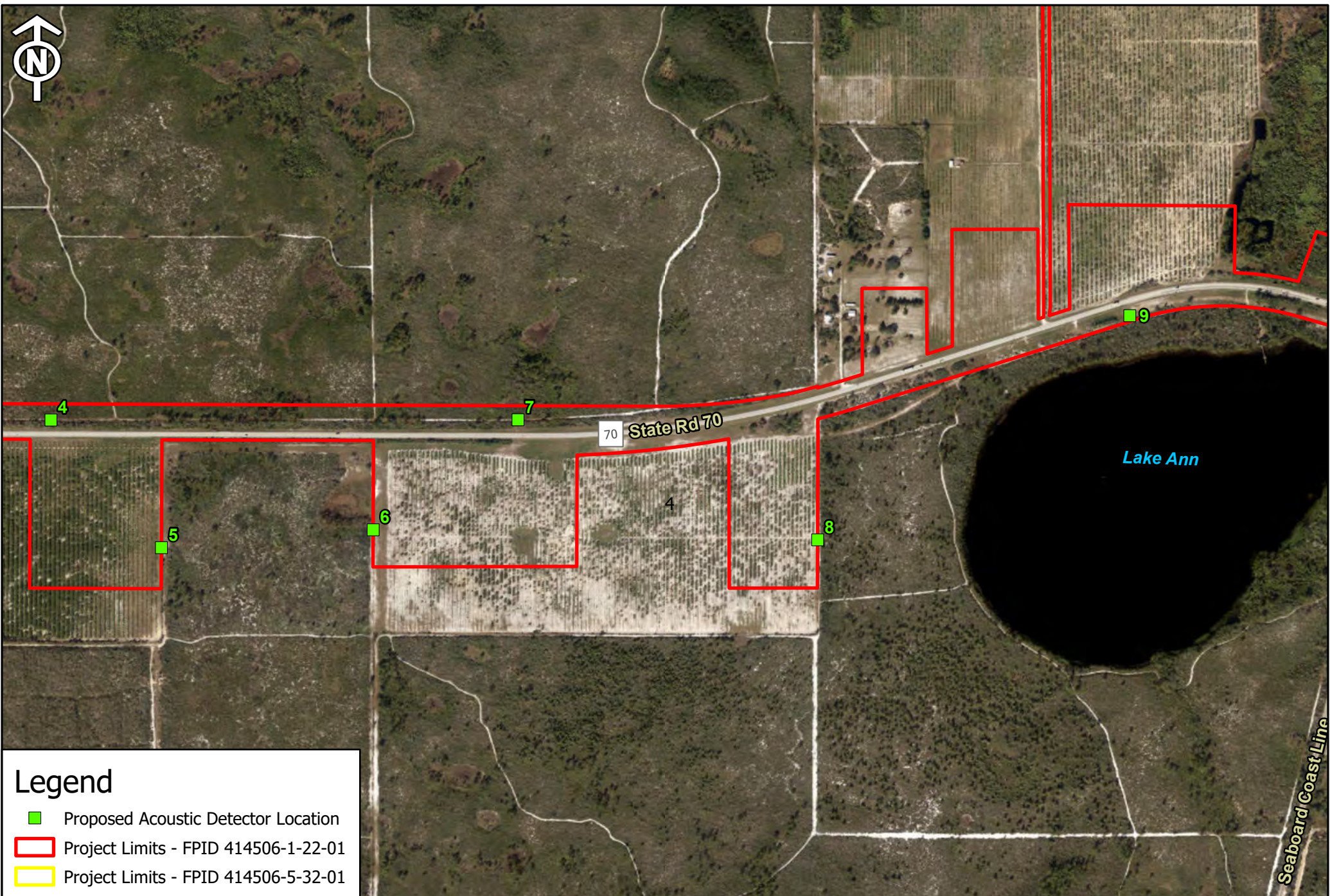


SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-3 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0

0.3 Miles



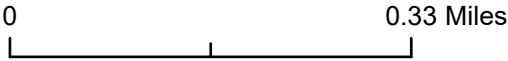


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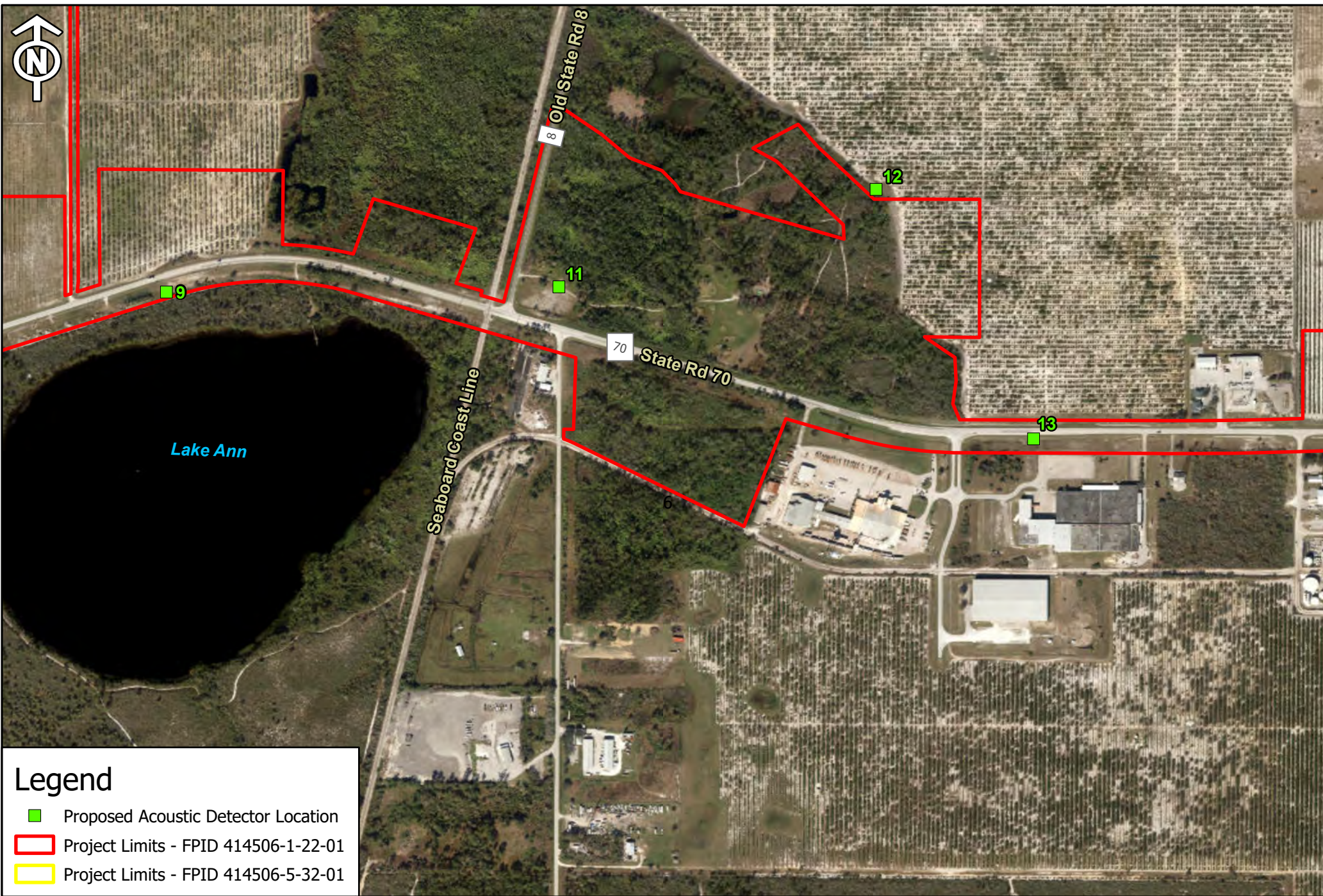
- Proposed Acoustic Detector Location
- ▭ Project Limits - FPID 414506-1-22-01
- ▭ Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-4 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

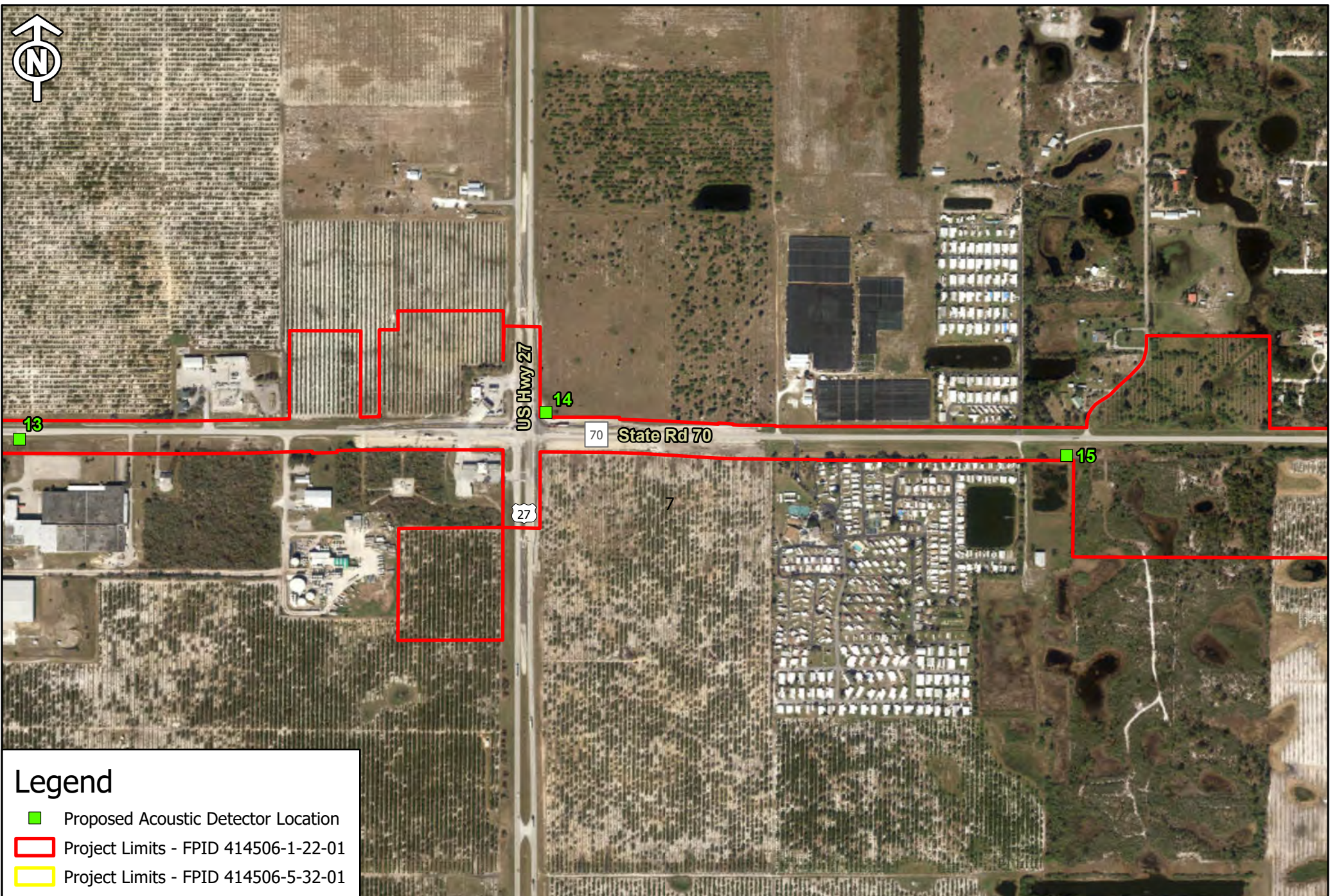






SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
 SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
 Figure 2-6 - Florida Bonneted Bat and Tricolored Bat
 Acoustic Survey Detector Location Map

0 0.3 Miles

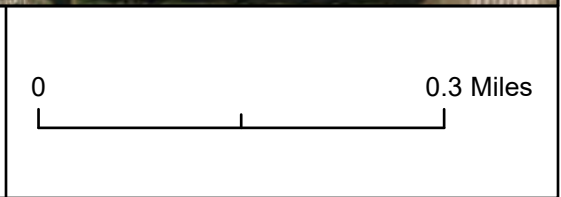


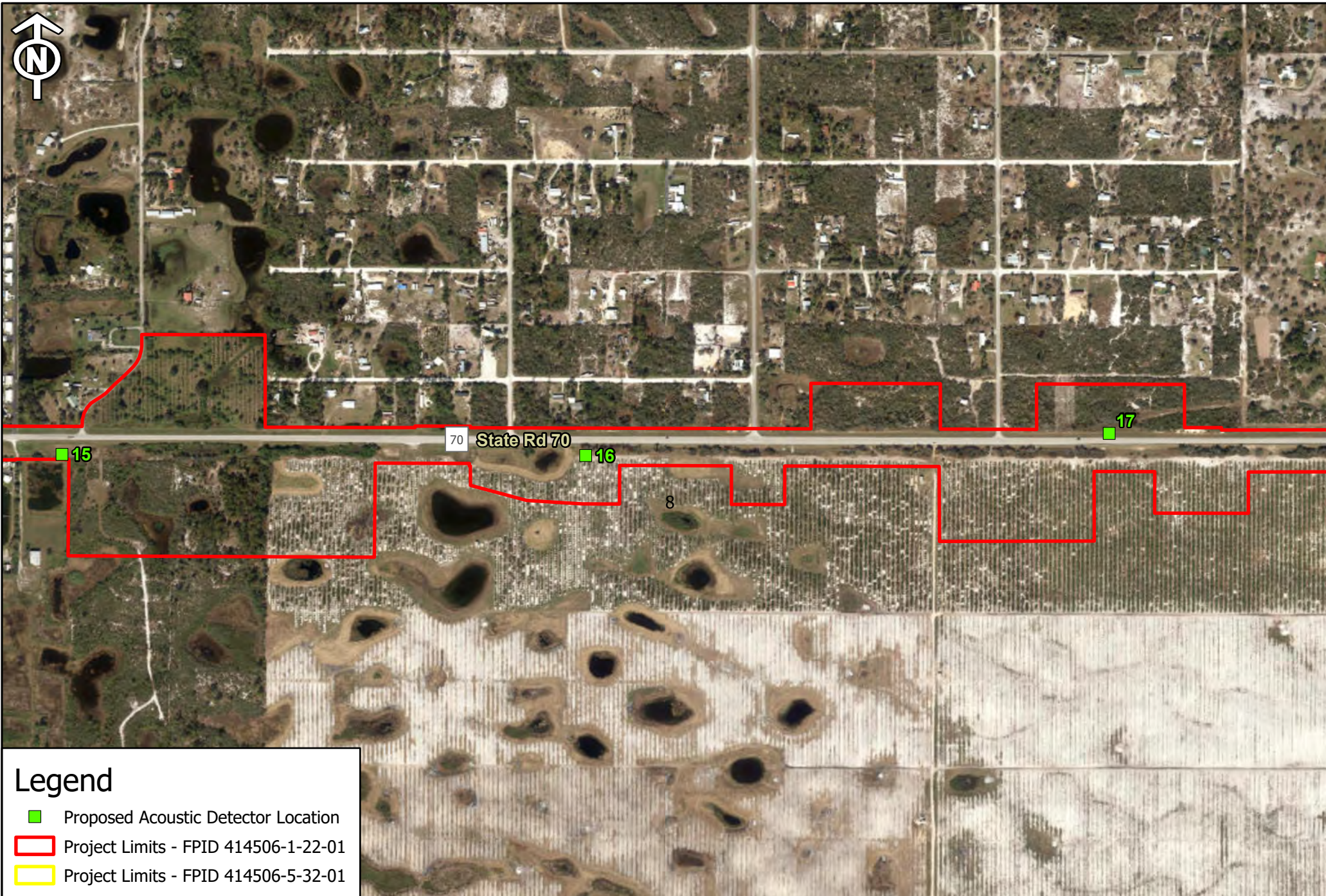
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- Proposed Acoustic Detector Location
- ▭ Project Limits - FPID 414506-1-22-01
- ▭ Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-7 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map





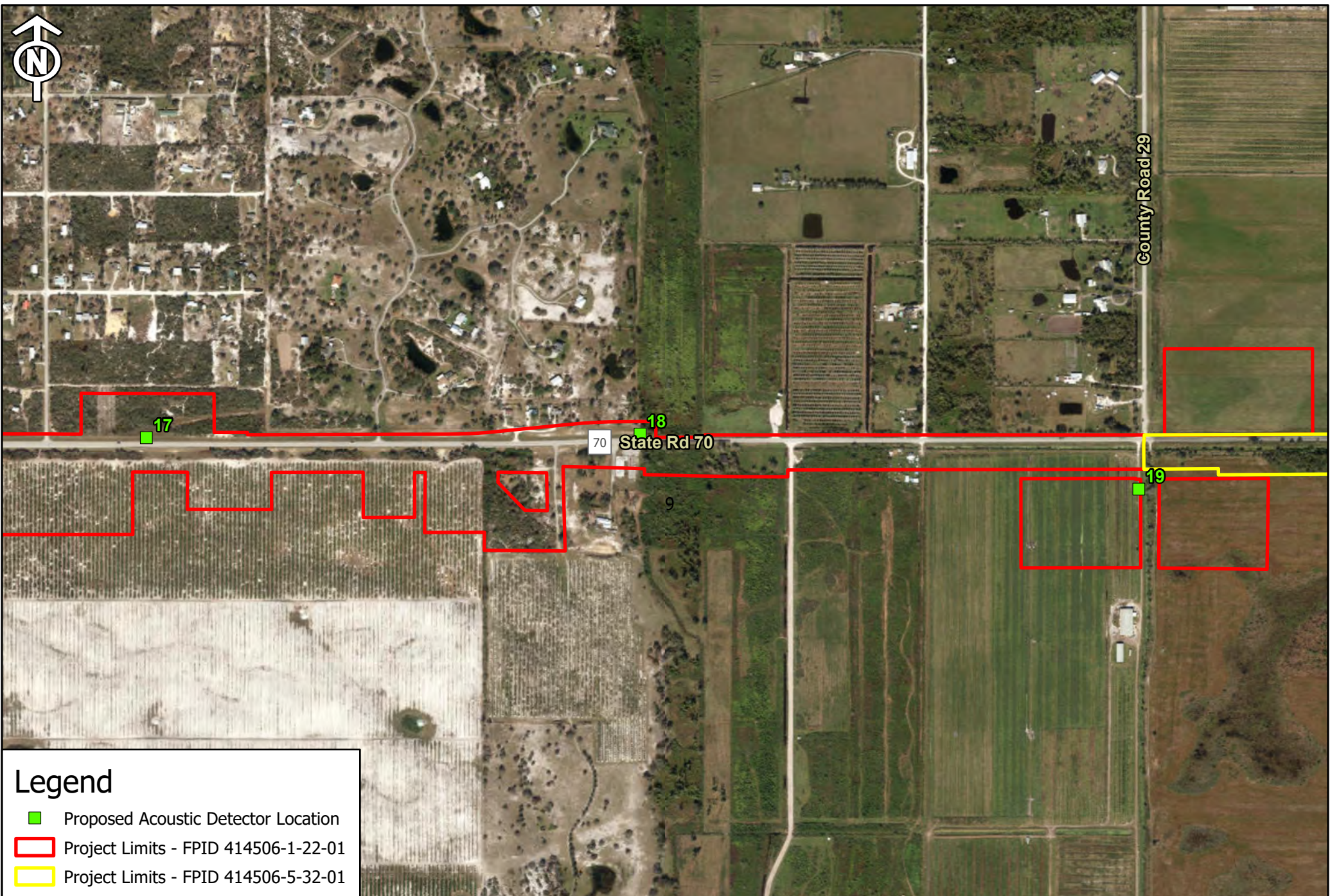
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- Proposed Acoustic Detector Location
- Project Limits - FPID 414506-1-22-01
- Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-8 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0 0.3 Miles

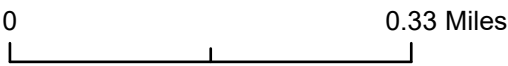


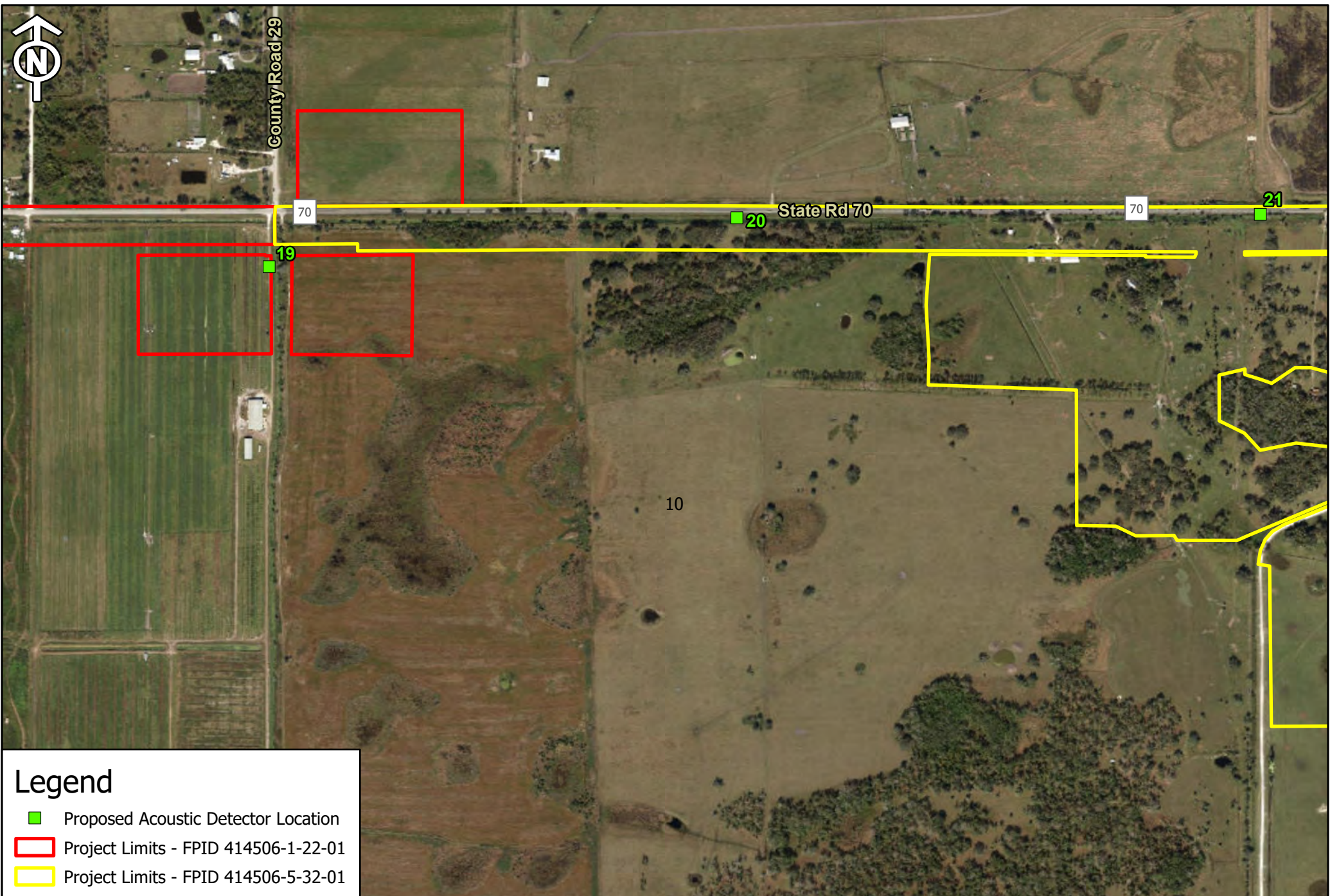
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- Proposed Acoustic Detector Location
- ▭ Project Limits - FPID 414506-1-22-01
- ▭ Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-9 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map





Legend

- Proposed Acoustic Detector Location
- Project Limits - FPID 414506-1-22-01
- Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-10 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0 0.3 Miles



21

70

State Rd 70

23

24

22

11

Legend

-  Proposed Acoustic Detector Location
-  Project Limits - FPID 414506-1-22-01
-  Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-11 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0

0.3 Miles





70 State Rd 70

24

25

12

Legend

-  Proposed Acoustic Detector Location
-  Project Limits - FPID 414506-1-22-01
-  Project Limits - FPID 414506-5-32-01

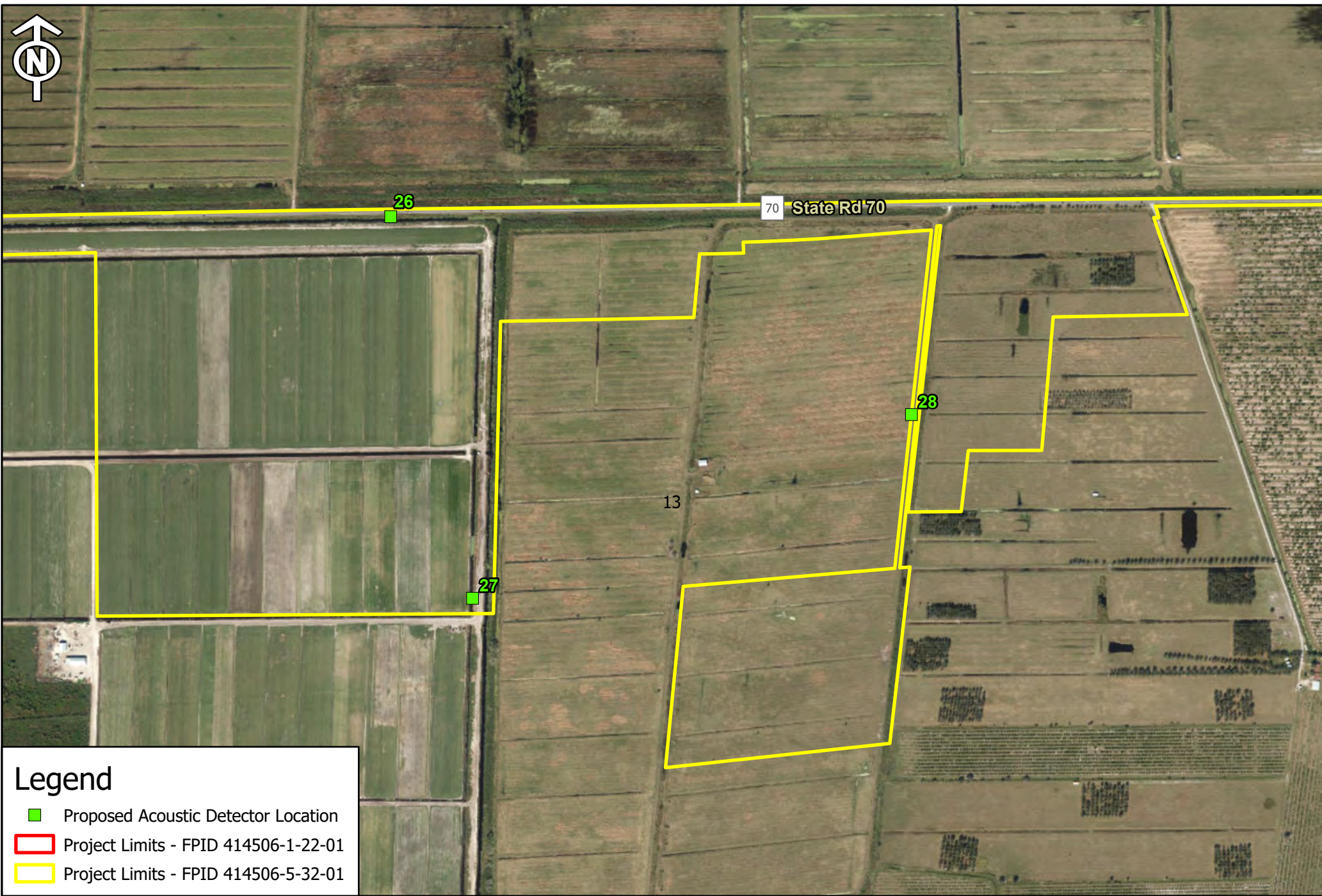


SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-12 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0

0.3 Miles





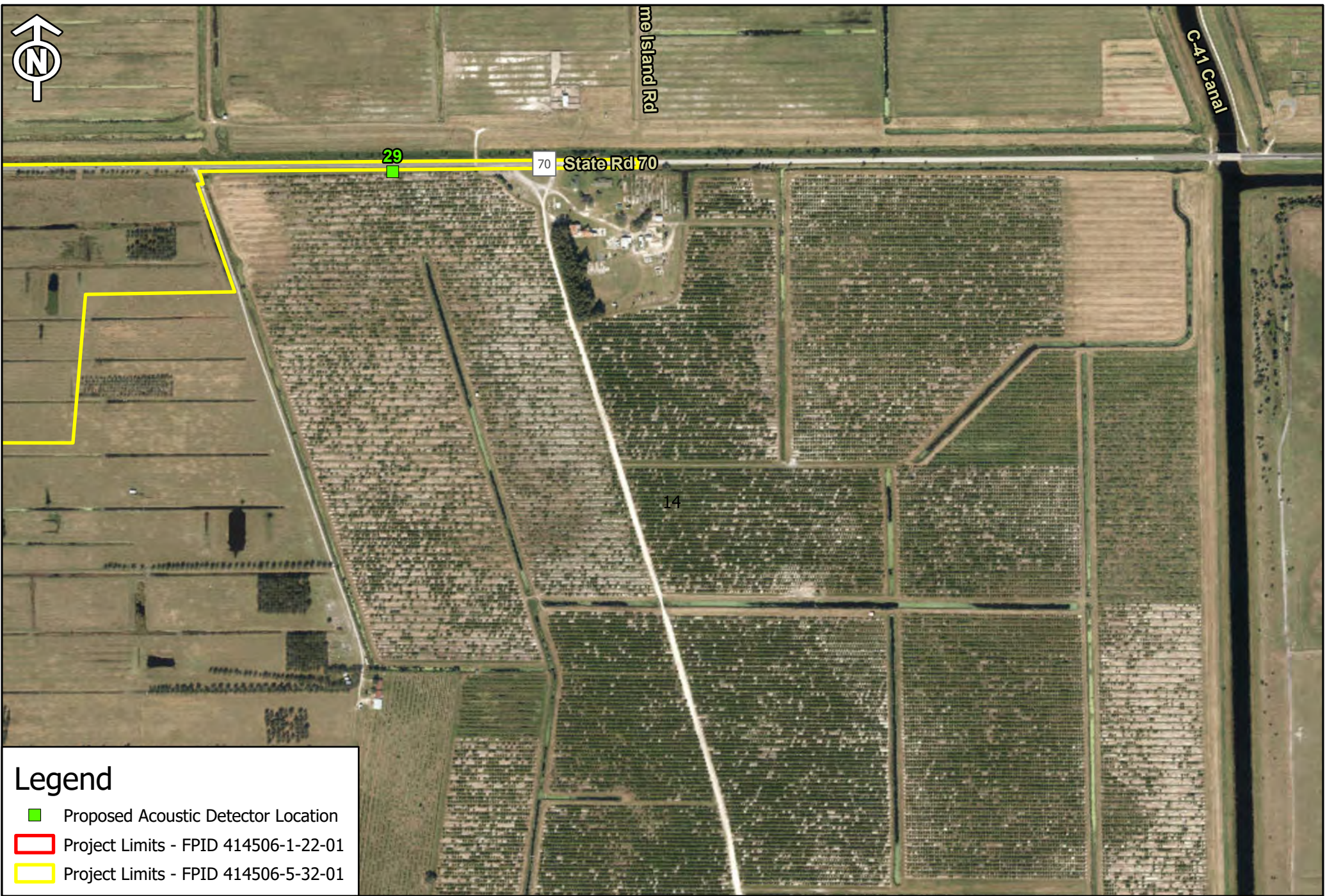
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- Proposed Acoustic Detector Location
- ▬ Project Limits - FPID 414506-1-22-01
- ▬ Project Limits - FPID 414506-5-32-01



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-13 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0 0.33 Miles



SR 70 from Jefferson Avenue to CR 29 - FPID 414506-1-22-01
SR 70 from CR 29 to Lonesome Island Road - FPID 414506-5-32-01
Figure 2-14 - Florida Bonneted Bat and Tricolored Bat
Acoustic Survey Detector Location Map

0 0.3 Miles

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 1



Survey Station No. 1 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 1 – Facing East



Survey Station No. 1 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 1 – Facing West



Survey Station No. 2

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 2 – Facing North



Survey Station No. 2 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 2 – Facing South



Survey Station No. 2 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 3



Survey Station No. 3 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 3 – Facing East



Survey Station No. 3 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 3 – Facing West



Survey Station No. 4

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 4 – Facing North



Survey Station No. 4 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 4 – Facing South



Survey Station No. 4 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 5



Survey Station No. 5 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 5 – Facing East



Survey Station No. 5 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 5 – Facing West



Survey Station No. 6

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 6 – Facing North



Survey Station No. 6 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 6 – Facing South



Survey Station No. 6 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 7



Survey Station No. 7 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 7 – Facing East



Survey Station No. 7 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 7 – Facing West



Survey Station No. 8

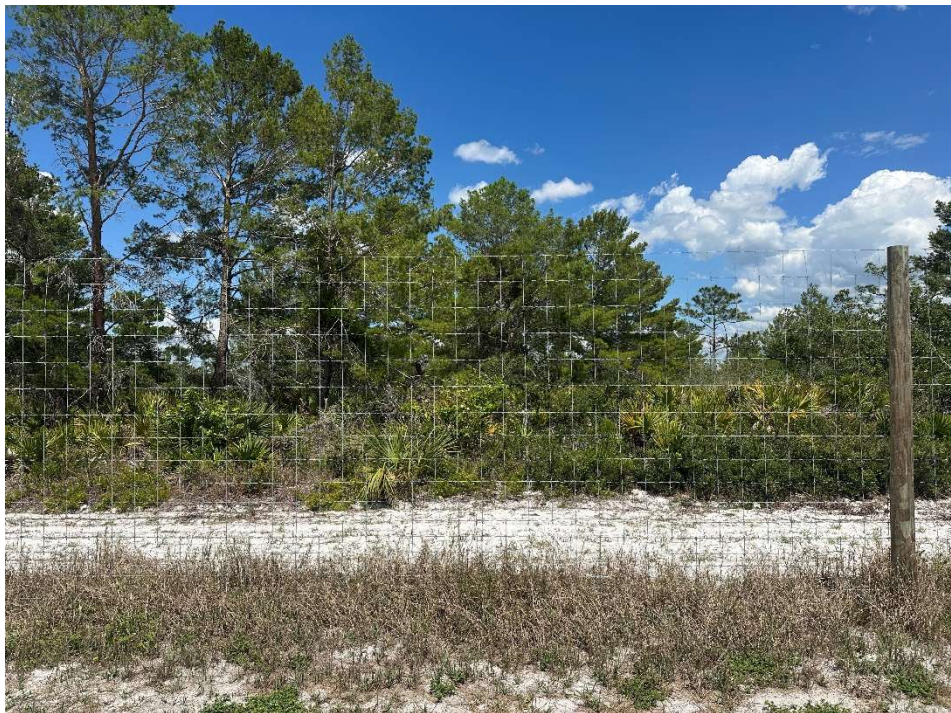
SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 8 – Facing North



Survey Station No. 8 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 8 – Facing South



Survey Station No. 8 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 9



Survey Station No. 9 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 9 – Facing East



Survey Station No. 9 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 9 – Facing West



Survey Station No. 10

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 10 – Facing North



Survey Station No. 10 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 10 – Facing South



Survey Station No. 10 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 11



Survey Station No. 11 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 11 – Facing East



Survey Station No. 11 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 11 – Facing West



Survey Station No. 12

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 12 – Facing North



Survey Station No. 12 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 12 – Facing South



Survey Station No. 12 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 13



Survey Station No. 13 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 13 – Facing East



Survey Station No. 13 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 13 – Facing West



Survey Station No. 14

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 14 – Facing North



Survey Station No. 14 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 14 – Facing South



Survey Station No. 14 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 15



Survey Station No. 15 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 15 – Facing East



Survey Station No. 15 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 15 – Facing West



Survey Station No. 16

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 16 – Facing North



Survey Station No. 16 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 16 – Facing South



Survey Station No. 16 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 17



Survey Station No. 17 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 17 – Facing East



Survey Station No. 17 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 17 – Facing West



Survey Station No. 18

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 18 – Facing North



Survey Station No. 18 – Facing East

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 18 – Facing South



Survey Station No. 18 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 19



Survey Station No. 19 – Facing North

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 19 – Facing East



Survey Station No. 19 – Facing South

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations



Survey Station No. 19 – Facing West

SR 70 from Jefferson Avenue to CR 29
FPID No. 414506-1-22-01

Appendix B

Representative Photographs of Acoustic Survey Stations

Appendix C

Acoustic Detector Deployment Data Sheets

EXAMPLE DATA SHEET FOR ACOUSTIC DETECTOR DEPLOYMENTS

Date(s):	5/14/25				
Project:	SR 70 from Jefferson Ave to CR 29				
Site & GRTS ID:					
Name(s):	Shannon Freeman				
ACOUSTIC DETECTOR DEPLOYMENTS					
Location Name	4-12	7-12	3-12	2-12	1-12
Latitude	27.208827	27.208831	27.208380	27.208098	27.208338
Longitude	81.371484	81.362846	81.379810	81.388540	81.397222
Survey Start Time	5/14/25	→			
Survey End Time	5/25/25	→			
Detector Type	SM4 BATES	SM4 BATES	SM4 BATES	SM4 BATES	SM4 BATES
Detector Serial Number	S4U05538		S4U25354	S4U14559	S4U02423
Microphone Model	SMM-V2 MU2286S9	SMM-V2 MU215915	SMM-V2 MU229572	SMM-V2 MU215369	SMM-V2 MU201637
Microphone Orientation	vertical	vertical	vertical	vertical	vertical
Microphone Height	3m	3m	3m	3m	3m
Distance Nearest Clutter (m)	3m	3m	3m	10m	20m
Clutter Type	vegetation	vegetation	vegetation	vegetation	vegetation
Broad Habitat Type	forested-dec	shrubland + forested-dec	grassland + forested-dec	wetland + forested wetland	grassland
Land Unit Code	H16H	H16H	H16H	H16H	H16H
Contact Information					
Deployment Comments					

Edie. Talky @ myflorida.com

EXAMPLE DATA SHEET FOR ACOUSTIC DETECTOR DEPLOYMENTS

Date(s):	5/14/25				
Project:	SR 70 from Jefferson Ave to CR 29				
Site & GRTS ID:					
Name(s):	Channon Freeman				
ACOUSTIC DETECTOR DEPLOYMENTS					
Location Name	10-12	9-12	8-12	7 ⁶ -12	5 ⁵ -12
Latitude	27.221171	27.216750	27.206610	27.206795	27.206485
Longitude	81.350216	81.351267	81.357363	81.365525	81.369441
Survey Start Time	5/14/25				→
Survey End Time	5/25/25				→
Detector Type	SM4BATFS	SM4BATFS	SM4BATFS	SM4BATFS	SM4BATFS
Detector Serial Number	2 S4U25886	S4U01394	S4U1354	S4U1876	S4U25403
Microphone Model	MU226894 SMM-V2	MU210864 SMM-V2	MU213581 SMM-V2	MU210969 SMM-V2	MU231162 SMM-V2
Microphone Orientation	vertical	vertical	vertical	vertical	vertical
Microphone Height	3m	3m	3m	3m	3m
Distance Nearest Clutter (m)	3m	3m	5m	10m	5m
Clutter Type	vegetation	vegetation	vegetation	vegetation	vegetation
Broad Habitat Type	agriculture + forested-decid.	agriculture + shrubland	agriculture + forested-conif.	agriculture + forested-conif.	agriculture + shrubland
Land Unit Code	H01H	H16H	H16H	shrub and H16H	H16H
Contact Information					
Deployment Comments					

EXAMPLE DATA SHEET FOR ACOUSTIC DETECTOR DEPLOYMENTS

Date(s):	5/14/25				
Project:	SR-70 from Jefferson Ave to CR 29				
Site & GRTS ID:					
Name(s):	Shannon Freeman				
ACOUSTIC DETECTOR DEPLOYMENTS					
Location Name	15-13	14-13	13-12	12-12	11-12
Latitude	27.207903	27.208014	27.208305	27.212309	27.210702
Longitude	81.319511	81.328001	81.337054	81.339600	81.345619
Survey Start Time	5/14/25				→
Survey End Time	5/25/25				→
Detector Type	SM4BATFS	SM4BATFS	SM4BATFS	SM4BATFS	SM4BATFS
Detector Serial Number	S4V20003	S4V259101	S4V08529	S4V08510	S4V25895
Microphone Model	MV201813 SMM-U2	MV206815 SMM-U2	MV211568 SMM-U2	MV211569 SMM-U2	MV231271 SMM-U2
Microphone Orientation	vertical	vertical	vertical	vertical	vertical
Microphone Height	3m	3m	3m	3m	3m
Distance Nearest Clutter (m)	10m	10m	8m		20m
Clutter Type	vegetation	vegetation	vegetation	vegetation	vegetation
Broad Habitat Type	shrubland & water	grassland	grassland	agriculture + forested-conifer	grassland
Land Unit Code	th6H	th6H	th6H	th6H	th6H
Contact Information					
Deployment Comments					

EXAMPLE DATA SHEET FOR ACOUSTIC DETECTOR DEPLOYMENTS

Date(s):	4/22/25				
Project:	SR 70 from Jefferson Avenue to CR 29 PD&E Study				
Site & GRTS ID:					
Name(s):	Aux Hypolito & Shannon Freeman				
ACOUSTIC DETECTOR DEPLOYMENTS					
Location Name	Station 19-13	18-13	17-13	16-13	
Latitude	27.208°N	27.208°N	27.208°N	27.208°N	
Longitude	81.284°W	81.290°W	81.302°W	81.311°W	
Survey Start Time	4/22/25	4/22/25	4/22/25	4/22/25	
Survey End Time	5/13/25			→	
Detector Type	SM4BATFS	SM4BATFS	SM4BATFS	SM4BATFS	
Detector Serial Number	S4U14559	S4U14558	S4U25354	S4U25403	
Microphone Model	mm-U2 MU215369	MU215195	MU229572	MU231162	→
Microphone Orientation	vertical	vertical	vertical	vertical	
Microphone Height	3m	3m	3m	3m	
Distance Nearest Clutter (m)	>10m	>10m	>10m	>10m	
Clutter Type	herbaceous	forested	citrus groves	citrus groves	
Broad Habitat Type	urban road ROW	urban road ROW	urban road ROW	urban road ROW	
Land Unit Code	HIGH	HIGH	HIGH	HIGH	
Contact Information					
Deployment Comments	WL ditch to S		citrus groves to south	citrus groves to south	

Appendix D

Weather Data

Appendix D - NOAA National Weather Service Data

Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With F88 Parameters		
											1 hr (in.)	3 hr (in.)	6 hr (in.)				
Second Deployment - Stations 1-15																	
1	5/14/2025-5/15/2025	Sunset	8:06 PM													1-15	Yes
		7:33 PM	87.0	65.5	49	SSW	1.3	NULL	NULL	29.77	0	0	0				
		7:39 PM	86.5	66.6	52	SW	0.4	NULL	NULL	29.78	0	0	0				
		7:40 PM	86.2	68.1	55	ENE	1.3	NULL	NULL	29.78	0	0	0				
		7:46 PM	85.1	69.1	59	SE	4.9	NULL	NULL	29.78	0	0	0				
		7:59 PM	83.4	68.7	62	ESE	4.6	NULL	NULL	29.78	0	0	0				
		8:03 PM	82.9	68.0	61	SE	5.8	NULL	NULL	29.78	0	0	0				
		8:07 PM	82.9	68.6	62	ESE	3.6	NULL	NULL	29.79	0	0	0				
		8:14 PM	81.9	68.8	65	ESE	3.0	NULL	NULL	29.78	0	0	0				
		8:21 PM	81.1	68.6	66	SE	3.1	NULL	NULL	29.79	0	0	0				
		8:28 PM	80.8	68.8	67	ESE	1.3	NULL	NULL	29.79	0	0	0				
		8:34 PM	81.0	68.1	65	SE	1.8	NULL	NULL	29.80	0	0	0				
		8:38 PM	81.2	68.1	65	SSE	0.0	NULL	NULL	29.80	0	0	0				
		8:49 PM	81.1	67.7	64	South	2.5	NULL	NULL	29.79	0	0	0				
		8:58 PM	81.0	68.1	65	SSW	0.7	NULL	NULL	29.80	0	0	0				
		9:01 PM	80.8	68.4	66	SSW	1.3	NULL	NULL	29.80	0	0	0				
		9:07 PM	80.8	68.4	66	WSW	2.0	NULL	NULL	29.81	0	0	0				
		9:12 PM	80.8	68.8	67	WSW	2.0	NULL	NULL	29.81	0	0	0				
		9:19 PM	80.4	68.8	68	WSW	1.8	NULL	NULL	29.81	0	0	0				
		9:23 PM	80.2	68.7	68	WSW	2.7	NULL	NULL	29.81	0	0	0				
		9:31 PM	80.1	69.4	70	ESE	1.1	NULL	NULL	29.82	0	0	0				
		9:40 PM	79.2	69.4	72	ESE	1.3	NULL	NULL	29.82	0	0	0				
		9:49 PM	77.9	69.5	76	ESE	1.8	NULL	NULL	29.82	0	0	0				
		9:54 PM	77.6	69.2	76	ESE	1.8	NULL	NULL	29.83	0	0	0				
		9:55 PM	77.7	68.7	74	East	1.1	NULL	NULL	29.82	0	0	0				
		10:03 PM	78.9	68.9	72	ESE	3.6	NULL	NULL	29.83	0	0	0				
		10:09 PM	79.0	68.6	71	SE	3.7	NULL	NULL	29.83	0	0	0				
		10:10 PM	79.2	68.6	70	ESE	5.4	NULL	NULL	29.83	0	0	0				
		10:16 PM	79.3	68.6	70	SE	7.7	NULL	NULL	29.84	0	0	0				
		10:24 PM	79.2	69.0	71	ESE	7.8	NULL	NULL	29.84	0	0	0				
		10:27 PM	79.0	68.6	71	ESE	6.9	NULL	NULL	29.84	0	0	0				
		10:34 PM	78.6	68.2	71	SE	7.3	NULL	NULL	29.84	0	0	0				
		10:37 PM	78.4	68.0	71	SE	6.3	NULL	NULL	29.84	0	0	0				
		10:44 PM	78.0	68.0	72	ESE	3.7	NULL	NULL	29.84	0	0	0				
		10:48 PM	77.9	68.1	72	SSE	3.4	NULL	NULL	29.84	0	0	0				
		10:55 PM	77.9	67.7	71	SE	4.7	NULL	NULL	29.85	0	0	0				
		11:00 PM	77.9	67.3	70	SSE	2.9	NULL	NULL	29.85	0	0	0				
		11:18 PM	76.8	67.5	73	SE	5.1	NULL	NULL	29.85	0	0	0				
		11:24 PM	76.5	67.2	73	SSE	3.6	NULL	NULL	29.85	0	0	0				
		11:25 PM	76.5	67.2	73	ESE	2.9	NULL	NULL	29.85	0	0	0				
		11:30 PM	76.3	67.4	74	SE	3.6	NULL	NULL	29.85	0	0	0				
		12:02 AM	75.1	67.4	77	SSE	3.4	NULL	NULL	29.85	0	0	0				
		12:06 AM	75.0	67.7	78	South	3.4	NULL	NULL	29.86	0	0	0				
		12:18 AM	74.7	67.5	78	South	2.4	NULL	NULL	29.86	0	0	0				
		12:21 AM	74.5	67.5	79	SSE	2.0	NULL	NULL	29.86	0	0	0				
		12:28 AM	74.4	67.4	79	SE	2.4	NULL	NULL	29.86	0	0	0				
		12:32 AM	74.3	67.4	79	SE	2.0	NULL	NULL	29.86	0	0	0				
		12:35 AM	74.1	67.2	79	SSW	1.3	NULL	NULL	29.86	0	0	0				
		12:42 AM	73.9	67.3	80	SSE	0.0	NULL	NULL	29.85	0	0	0				
		12:49 AM	74.1	67.4	80	South	1.0	NULL	NULL	29.86	0	0	0				
		12:50 AM	74.1	67.5	80	SSW	0.0	NULL	NULL	29.86	0	0	0				
		12:59 AM	74.1	67.2	79	South	1.3	NULL	NULL	29.86	0	0	0				
		1:02 AM	74.1	67.2	79	SSW	2.2	NULL	NULL	29.85	0	0	0				
		1:08 AM	74.1	67.2	79	South	1.0	NULL	NULL	29.86	0	0	0				
		1:21 AM	74.1	67.2	79	SW	2.1	NULL	NULL	29.85	0	0	0				
		1:26 AM	74.1	67.2	79	SSE	2.7	NULL	NULL	29.85	0	0	0				
		1:33 AM	73.9	67.0	79	SSE	2.8	NULL	NULL	29.85	0	0	0				
		1:39 AM	73.7	66.9	79	South	1.6	NULL	NULL	29.85	0	0	0				
		1:43 AM	73.5	66.9	80	SE	0.7	NULL	NULL	29.84	0	0	0				
		1:53 AM	73.0	66.8	81	WNW	0.0	NULL	NULL	29.84	0	0	0				
		1:55 AM	73.0	66.8	81	SSE	0.0	NULL	NULL	29.83	0	0	0				
		2:04 AM	72.7	66.9	82	SSW	0.0	NULL	NULL	29.84	0	0	0				
		2:07 AM	72.5	66.7	82	SE	0.0	NULL	NULL	29.84	0	0	0				
		2:14 AM	72.3	66.8	83	SE	2.1	NULL	NULL	29.83	0	0	0				
		2:19 AM	72.1	66.6	83	ESE	0.0	NULL	NULL	29.83	0	0	0				
		2:33 AM	71.9	66.6	84	South	0.5	NULL	NULL	29.83	0	0	0				
		2:36 AM	71.8	66.7	84	SE	0.0	NULL	NULL	29.83	0	0	0				
		2:44 AM	71.6	66.7	85	SSE	2.2	NULL	NULL	29.83	0	0	0				
		2:54 AM	71.3	66.6	85	SSE	1.2	NULL	NULL	29.82	0	0	0				
		2:59 AM	71.2	66.8	86	SSE	3.1	NULL	NULL	29.82	0	0	0				
		3:02 AM	71.2	66.8	86	SSE	1.9	NULL	NULL	29.82	0	0	0				
		3:09 AM	71.1	67.0	87	South	2.0	NULL	NULL	29.82	0	0	0				
		3:18 AM	71.1	67.0	87	SE	1.2	NULL	NULL	29.82	0	0	0				
		3:28 AM	71.2	67.1	87	South	1.2	NULL	NULL	29.82	0	0	0				
		3:34 AM	71.2	67.1	87	South	0.6	NULL	NULL	29.81	0	0	0				
		3:45 AM	70.9	66.8	87	West	1.1	NULL	NULL	29.82	0	0	0				
		3:54 AM	70.9	67.2	88	WNW	0.3	NULL	NULL	29.82	0	0	0				
		3:56 AM	70.7	67.0	88	West	0.6	NULL	NULL	29.82	0	0	0				
		4:02 AM	70.7	67.0	88	WNW	1.3	NULL	NULL	29.82	0	0	0				
		4:07 AM	70.3	66.9	89	West	0.6	NULL	NULL	29.82	0	0	0				
		4:11 AM	70.2	66.8	89	WSW	1.8	NULL	NULL	29.82	0	0	0				
		4:15 AM	70.0	66.9	90	WSW	0.0	NULL	NULL	29.81	0	0	0				
		4:24 AM	69.9	66.8	90	WSW	1.5	NULL	NULL	29.81	0	0	0				
		4:34 AM	69.6	66.5	90	WSW	0.0	NULL	NULL	29.81	0	0	0				
		4:39 AM	69.6	66.5	90	SW	0.0	NULL	NULL	29.81	0	0	0				
		4:48 AM	69.6	66.9	91	SW	1.6	NULL	NULL	29.81	0	0	0				
		4:52 AM	69.6	66.5	90	SW	1.3	NULL	NULL	29.81	0	0	0				
		5:02 AM	69.6	66.9	91	SW	1.6	NULL	NULL	29.81	0	0	0				
		5:09 AM	69.6	66.9	91	West	0.7	NULL	NULL	29.81	0	0	0				
		5:14 AM	69.4	66.7	91	West	0.0	NULL	NULL	29.82	0	0	0				
		5:18 AM	69.4	66.6	91	West	0.0	NULL	NULL	29.81	0	0	0				
		5:23 AM	69.1	66.4	91	NW	0.0	NULL	NULL	29.82	0	0	0				
		5:28 AM	68.9	66.2	91	NNW	0.0	NULL	NULL	29.82	0	0	0				
5:54 AM	67.5	65.1	92	ENE	1.3	NULL	NULL	29.82	0	0	0						
5:59 AM	67.5	65.2	93	ESE	1.1	NULL	NULL	29.82	0	0	0						
6:03 AM	67.6	65.5	93	ENE	0.0	NULL	NULL	29.82	0	0	0						
6:07 AM	67.5	65.4	93	ESE	0.0	NULL	NULL	29.82	0	0	0						
6:10 AM	67.6	65.8	94	SW	0.0	NULL	NULL	29.81	0	0	0						
6:17 AM	67.6	65.5	93	ESE	1.6	NULL	NULL	29.82	0	0	0						
6:31 AM	68.0	66.2	94	SSE	1.3	NULL	NULL	29.82	0	0	0						
6:39 AM	67.6	65.8	94	North	0.0	NULL	NULL	29.82	0	0	0						
6:41 AM	67.5	65.7	94	North	0.0	NULL	NULL	29.82	0	0	0						
6:48 AM	67.6	65.8	94	ENE	0.7	NULL	NULL	29.83	0	0	0						
6:58 AM	67.5	65.7	94	SE	0.0	NULL	NULL	29.83	0	0	0						
7:00 AM	67.6	66.1	95	SE	0.0	NULL	NULL	29.83	0	0	0						
7:08 AM	68.5	66.7	94	NE	0.0	NULL	NULL	29.83	0	0	0						
Sunrise		6:37 AM															

2	Sunset	7:33 PM	86.8	64.4	48	SE	4.5	NULL	NULL	29.84	0	0	0	1 - 15	Yes
	7:39 PM	86.7	64.6	48	ESE	4.5	NULL	NULL	29.84	0	0	0			
	7:43 PM	86.7	64.6	48	ESE	4.5	NULL	NULL	29.84	0	0	0			
	7:49 PM	85.8	63.2	47	SE	4.6	NULL	NULL	29.84	0	0	0			
	7:54 PM	85.4	63.0	47	ESE	3.7	NULL	NULL	29.84	0	0	0			
	7:56 PM	84.7	62.8	48	ESE	3.4	NULL	NULL	29.83	0	0	0			
	8:03 PM	84.4	63.1	49	ESE	2.9	NULL	NULL	29.84	0	0	0			
	8:09 PM	84.1	62.8	49	ESE	3.0	NULL	NULL	29.84	0	0	0			
	8:14 PM	83.8	63.1	50	ESE	2.5	NULL	NULL	29.84	0	0	0			
	8:17 PM	83.5	62.9	50	SE	2.9	NULL	NULL	29.84	0	0	0			
	8:20 PM	83.3	63.3	51	ESE	2.5	NULL	NULL	29.84	0	0	0			
	8:34 PM	82.7	63.8	53	ESE	2.9	NULL	NULL	29.85	0	0	0			
	8:37 PM	82.4	64.1	54	ESE	3.1	NULL	NULL	29.85	0	0	0			
	8:44 PM	82.4	64.1	54	SE	5.1	NULL	NULL	29.84	0	0	0			
	8:53 PM	82.0	64.2	55	ESE	3.8	NULL	NULL	29.85	0	0	0			
	8:58 PM	81.5	64.8	57	ESE	2.9	NULL	NULL	29.85	0	0	0			
	9:08 PM	81.1	64.9	58	WSW	4.0	NULL	NULL	29.86	0	0	0			
	9:12 PM	81.1	64.9	58	WSW	4.0	NULL	NULL	29.86	0	0	0			
	9:16 PM	81.2	64.5	57	WSW	4.0	NULL	NULL	29.86	0	0	0			
	9:23 PM	80.9	65.0	59	WSW	2.2	NULL	NULL	29.87	0	0	0			
	9:28 PM	80.9	64.7	58	WSW	2.9	NULL	NULL	29.87	0	0	0			
	9:43 PM	80.6	65.6	61	SW	2.9	NULL	NULL	29.88	0	0	0			
	9:53 PM	80.1	65.9	62	SW	2.9	NULL	NULL	29.88	0	0	0			
	9:57 PM	79.8	66.1	63	SW	1.6	NULL	NULL	29.88	0	0	0			
	10:09 PM	79.3	65.6	63	South	0.0	NULL	NULL	29.88	0	0	0			
	10:12 PM	79.2	65.9	64	South	2.5	NULL	NULL	29.89	0	0	0			
	10:21 PM	78.8	65.6	64	SE	1.8	NULL	NULL	29.90	0	0	0			
	10:27 PM	79.2	65.5	63	SSE	0.0	NULL	NULL	29.90	0	0	0			
	10:44 PM	78.8	65.6	64	SSW	1.3	NULL	NULL	29.90	0	0	0			
	10:47 PM	78.8	65.6	64	SW	2.5	NULL	NULL	29.90	0	0	0			
	10:52 PM	78.8	65.3	64	SSW	2.1	NULL	NULL	29.90	0	0	0			
	10:59 PM	78.4	65.7	65	WNW	0.0	NULL	NULL	29.91	0	0	0			
	11:04 PM	78.1	65.5	65	ENE	0.0	NULL	NULL	29.91	0	0	0			
	11:07 PM	77.7	65.4	66	ENE	0.0	NULL	NULL	29.90	0	0	0			
	11:14 PM	77.4	66.0	68	West	1.3	NULL	NULL	29.91	0	0	0			
	11:18 PM	77.4	65.6	67	West	1.1	NULL	NULL	29.91	0	0	0			
	11:21 PM	77.5	66.1	68	WNW	0.0	NULL	NULL	29.90	0	0	0			
	11:25 PM	77.4	66.4	69	SSW	0.0	NULL	NULL	29.91	0	0	0			
	11:31 PM	77.0	65.6	68	SSE	0.0	NULL	NULL	29.91	0	0	0			
	11:37 PM	76.8	65.8	69	South	0.0	NULL	NULL	29.91	0	0	0			
	11:43 PM	76.6	66.1	70	ESE	0.0	NULL	NULL	29.91	0	0	0			
	11:49 PM	76.6	66.0	70	South	1.0	NULL	NULL	29.91	0	0	0			
	11:59 PM	76.8	65.8	69	SSE	0.6	NULL	NULL	29.90	0	0	0			
	12:03 AM	76.6	66.1	70	SSW	2.0	NULL	NULL	29.91	0	0	0			
	12:09 AM	76.5	66.0	70	SSW	0.0	NULL	NULL	29.91	0	0	0			
	12:14 AM	76.3	66.1	71	SW	0.7	NULL	NULL	29.91	0	0	0			
	12:17 AM	76.1	66.0	71	SSW	1.8	NULL	NULL	29.91	0	0	0			
	12:24 AM	75.9	66.2	72	SE	0.9	NULL	NULL	29.90	0	0	0			
	12:25 AM	75.9	66.2	72	SE	0.0	NULL	NULL	29.90	0	0	0			
	12:31 AM	75.6	65.9	72	SE	1.1	NULL	NULL	29.90	0	0	0			
	12:39 AM	75.4	65.9	73	ESE	1.5	NULL	NULL	29.90	0	0	0			
	12:43 AM	75.2	65.9	73	SSE	0.7	NULL	NULL	29.90	0	0	0			
	12:45 AM	75.0	65.7	73	South	1.1	NULL	NULL	29.90	0	0	0			
	12:53 AM	75.0	65.7	73	SSE	1.3	NULL	NULL	29.89	0	0	0			
	12:59 AM	75.1	66.1	74	SW	1.0	NULL	NULL	29.90	0	0	0			
	1:04 AM	75.6	66.3	73	South	2.4	NULL	NULL	29.89	0	0	0			
	1:09 AM	75.6	66.4	73	South	2.3	NULL	NULL	29.89	0	0	0			
	1:14 AM	75.7	66.4	73	SSW	1.6	NULL	NULL	29.89	0	0	0			
	1:24 AM	75.6	66.4	73	SSE	0.4	NULL	NULL	29.89	0	0	0			
	1:28 AM	75.4	66.5	74	ESE	0.0	NULL	NULL	29.88	0	0	0			
	1:32 AM	75.2	66.3	74	South	0.0	NULL	NULL	29.88	0	0	0			
	1:39 AM	75.1	66.2	74	SSE	1.9	NULL	NULL	29.88	0	0	0			
	1:43 AM	75.0	66.5	75	South	1.5	NULL	NULL	29.88	0	0	0			
	1:49 AM	75.0	66.5	75	SSE	1.6	NULL	NULL	29.88	0	0	0			
	1:50 AM	75.0	66.5	75	ESE	1.3	NULL	NULL	29.87	0	0	0			
	1:57 AM	74.7	66.6	76	SSW	1.1	NULL	NULL	29.87	0	0	0			
	2:04 AM	74.6	66.7	77	SSE	0.0	NULL	NULL	29.88	0	0	0			
	2:09 AM	74.3	66.6	77	SE	0.0	NULL	NULL	29.88	0	0	0			
	2:11 AM	74.1	66.4	77	NE	1.1	NULL	NULL	29.87	0	0	0			
	2:18 AM	73.3	65.8	78	East	0.6	NULL	NULL	29.87	0	0	0			
	2:21 AM	72.7	65.8	79	ENE	1.1	NULL	NULL	29.87	0	0	0			
	2:28 AM	72.3	66.1	81	ENE	1.1	NULL	NULL	29.87	0	0	0			
	2:34 AM	72.1	66.1	82	ENE	0.6	NULL	NULL	29.87	0	0	0			
	2:35 AM	72.1	66.3	82	ENE	1.3	NULL	NULL	29.87	0	0	0			
	2:42 AM	72.7	66.9	82	East	1.7	NULL	NULL	29.87	0	0	0			
	2:46 AM	72.7	66.9	82	East	1.6	NULL	NULL	29.86	0	0	0			
	2:53 AM	72.7	66.5	81	ENE	1.1	NULL	NULL	29.86	0	0	0			
	2:57 AM	72.5	66.7	82	NNE	1.1	NULL	NULL	29.86	0	0	0			
	3:04 AM	72.1	66.5	83	NE	0.7	NULL	NULL	29.86	0	0	0			
	3:08 AM	72.1	66.6	83	NNE	0.0	NULL	NULL	29.86	0	0	0			
	3:13 AM	71.8	66.7	84	NE	0.0	NULL	NULL	29.86	0	0	0			
	3:17 AM	71.6	66.5	84	NNE	0.0	NULL	NULL	29.86	0	0	0			
	3:23 AM	71.6	66.8	85	SE	0.0	NULL	NULL	29.87	0	0	0			
	3:27 AM	71.6	67.2	86	NE	0.0	NULL	NULL	29.86	0	0	0			
	3:30 AM	71.4	67.0	86	NNE	0.0	NULL	NULL	29.86	0	0	0			
	3:39 AM	71.5	67.4	87	SE	1.5	NULL	NULL	29.86	0	0	0			
	3:41 AM	71.6	67.5	87	SE	1.8	NULL	NULL	29.86	0	0	0			
	3:49 AM	71.5	67.4	87	ENE	0.7	NULL	NULL	29.86	0	0	0			
	3:53 AM	71.4	67.3	87	ESE	0.0	NULL	NULL	29.86	0	0	0			
	3:56 AM	71.4	67.5	88	NE	0.6	NULL	NULL	29.86	0	0	0			
	4:03 AM	71.2	67.5	88	East	0.0	NULL	NULL	29.86	0	0	0			
	4:06 AM	71.1	67.4	88	SE	0.0	NULL	NULL	29.86	0	0	0			
	4:14 AM	70.9	67.2	88	ENE	1.1	NULL	NULL	29.86	0	0	0			
	4:23 AM	70.5	67.1	89	East	0.0	NULL	NULL	29.86	0	0	0			
	4:27 AM	70.5	67.1	89	ENE	0.0	NULL	NULL	29.86	0	0	0			
	4:32 AM	70.5	67.4	90	SSE	1.3	NULL	NULL	29.86	0	0	0			
	4:42 AM	70.5	67.4	90	South	0.6	NULL	NULL	29.86	0	0	0			
	4:48 AM	70.5	67.4	90	South	0.0	NULL	NULL	29.86	0	0	0			
	4:52 AM	70.3	67.2	90	South	1.1	NULL	NULL	29.86	0	0	0			
	4:59 AM	70.3	67.2	90	South	0.0	NULL	NULL	29.86	0	0	0			
5:03 AM	70.2	67.1	90	SW	0.8	NULL	NULL	29.86	0	0	0				
5:09 AM	70.2	67.1	90	SW	2.2	NULL	NULL	29.86	0	0	0				
5:12 AM	70.0	66.9	90	SW	1.1	NULL	NULL	29.86	0	0	0				
5:19 AM	70.0	66.9	90	SW	2.0	NULL	NULL	29.86	0	0	0				
5:23 AM	69.9	66.8	90	WSW	1.5	NULL	NULL	29.86	0	0	0				
5:33 AM	69.6	66.7	91	WSW	1.5	NULL	NULL	29.86	0	0	0				
5:37 AM	69.5	66.8	91	SW	1.9	NULL	NULL	29.86	0	0	0				
5:40 AM	69.4	66.7	91	SW	2.0	NULL	NULL	29.86	0	0	0				
5:52 AM	69.1	66.7	92	SW	1.3	NULL	NULL	29.86	0	0	0				
5:58 AM	68.9	66.5	92	SW	0.6	NULL	NULL	29.86	0	0	0				
6:02 AM	68.8	66.4	92	WSW	0.6	NULL	NULL	29.86	0	0	0				
6:05 AM	68.7	66.6	93	WSW	1.3	NULL	NULL	29.86	0	0	0				
6:13 AM	68.7	66.6	93	WSW	2.0	NULL	NULL	29.86	0	0	0				
6:19 AM	68.6	66.5	93	WSW	1.3	NULL	NULL	29.86	0	0	0				
6:22 AM	68.5	66.4	93	West	0.0	NULL	NULL	29.86	0	0	0				
6:29 AM	68.4	66.4	93	WSW	0.5	NULL	NULL	29.87	0	0	0				
6:32 AM	68.4	66.6	94	WSW	0.0	NULL	NULL	29.86	0	0	0				
6:48 AM	68.2	66.4	94	SW	1.3	NULL	NULL	29.87	0	0	0				
6:53 AM	68.3	66.5	94	SW	0.0	NULL	NULL	29.87	0	0	0				
6:58 AM	68.4	66.6	94	SW	0.0	NULL	NULL	29.87	0	0	0				
7:01 AM	68.5	66.7	94	NW	0.0	NULL	NULL	29.88	0	0	0				
7:08 AM	68.9	67.1	94	SW	1.6	NULL	NULL	29.88	0	0	0				
	Sunrise					6:36 AM									

3	Sunset	8:07 PM										1 - 15	Yes	
	7:35 PM	92.1	62.4	37	Calm	--	10	NULL	29.98	0	0			0
	7:55 PM	91.4	65.7	43	Calm	--	10	NULL	29.98	0	0			0
	8:15 PM	89.4	68.5	50	Calm	--	10	NULL	29.98	0	0			0
	8:35 PM	86.0	69.4	58	SE	9.0	10	NULL	29.99	0	0			0
	8:55 PM	87.4	71.1	58	Calm	--	10	NULL	30.00	0	0			0
	9:15 PM	87.6	69.8	56	Calm	--	10	NULL	30.01	0	0			0
	9:35 PM	85.8	69.8	59	NW	7.0	10	NULL	30.01	0	0			0
	9:55 PM	84.7	69.8	61	NW	7.0	10	NULL	30.02	0	0			0
	10:15 PM	83.5	70.5	65	Calm	--	10	NULL	30.02	0	0			0
	10:35 PM	82.0	71.1	69	NW	7.0	10	NULL	30.03	0	0			0
	10:55 PM	81.9	70.9	69	NW	6.0	10	NULL	30.03	0	0			0
	11:15 PM	81.3	70.5	70	NW	6.0	10	NULL	30.03	0	0			0
	11:35 PM	80.4	70.0	71	Calm	--	10	NULL	30.03	0	0			0
	11:55 PM	80.4	69.6	70	West	6.0	10	NULL	30.04	0	0			0
	12:15 AM	79.3	69.8	73	West	6.0	10	NULL	30.04	0	0			0
	12:35 AM	78.8	69.6	74	West	5.0	10	NULL	30.03	0	0			0
	12:55 AM	77.9	69.6	76	SW	3.0	10	NULL	30.03	0	0			0
	1:15 AM	76.6	69.3	78	Calm	--	10	NULL	30.03	0	0			0
	1:35 AM	77.2	69.4	77	Calm	--	10	NULL	30.02	0	0			0
	1:55 AM	75.2	69.3	82	Calm	--	10	NULL	30.02	0	0			0
	2:55 AM	75.2	70.2	84	Calm	--	10	NULL	30.00	0	0			0
	3:15 AM	73.8	70.5	90	NW	3.0	10	NULL	30.00	0	0			0
	3:35 AM	72.9	70.5	92	NW	3.0	10	NULL	30.00	0	0			0
	3:55 AM	73.8	70.0	88	Calm	--	10	NULL	29.99	0	0			0
	4:15 AM	72.3	69.3	90	NW	6.0	10	NULL	30.00	0	0			0
	4:35 AM	72.0	68.9	90	NW	7.0	10	NULL	30.00	0	0			0
	4:55 AM	72.0	68.2	88	NW	7.0	10	NULL	30.01	0	0			0
	5:15 AM	71.8	67.6	87	NW	6.0	10	NULL	30.01	0	0			0
	5:35 AM	73.0	67.6	83	Calm	--	10	NULL	30.01	0	0			0
	5:55 AM	72.5	67.6	85	NW	3.0	10	NULL	30.01	0	0			0
	6:15 AM	72.5	67.8	85	Calm	--	10	NULL	30.01	0	0			0
	6:35 AM	72.0	67.5	86	NW	5.0	10	NULL	30.02	0	0			0
	6:55 AM	71.1	67.6	89	Calm	--	10	NULL	30.02	0	0			0
	7:15 AM	70.3	66.9	89	South	6.0	10	NULL	30.03	0	0			0
Sunrise	6:36 AM													
4	Sunset	8:08 PM										1 - 15	Yes	
	7:35 PM	91.4	68.0	46	Calm	--	0	NULL	0.00	0	0			0
	7:55 PM	90.5	69.1	49	Calm	--	10	NULL	29.98	0	0			0
	8:15 PM	90.7	68.0	47	Calm	--	10	NULL	29.98	0	0			0
	8:35 PM	88.9	70.2	54	Calm	--	10	NULL	29.98	0	0			0
	8:55 PM	88.0	71.2	58	NW	6.0	10	NULL	29.99	0	0			0
	9:15 PM	86.4	72.1	63	NW	7.0	10	NULL	29.99	0	0			0
	9:35 PM	84.9	72.3	66	NW	7.0	10	NULL	29.99	0	0			0
	9:55 PM	84.0	72.1	68	East	8.0	10	NULL	29.99	0	0			0
	10:15 PM	82.6	71.8	70	NE	3.0	10	NULL	29.99	0	0			0
	10:35 PM	81.3	71.6	72	Calm	--	10	NULL	30.00	0	0			0
	10:55 PM	81.5	71.6	72	Calm	--	10	NULL	30.00	0	0			0
	11:15 PM	80.4	72.9	78	Calm	--	10	NULL	30.00	0	0			0
	11:35 PM	79.9	72.7	79	Calm	--	10	NULL	30.01	0	0			0
	11:55 PM	80.1	72.9	79	Calm	--	10	NULL	30.01	0	0			0
	12:15 AM	80.1	72.5	78	West	3.0	10	NULL	30.01	0	0			0
	12:35 AM	79.5	72.5	79	Calm	--	10	NULL	30.01	0	0			0
	12:55 AM	79.5	72.3	79	Calm	--	10	NULL	30.00	0	0			0
	1:15 AM	75.6	71.6	88	Calm	--	10	NULL	30.00	0	0			0
	1:35 AM	75.9	72.0	88	South	5.0	10	NULL	29.99	0	0			0
	1:55 AM	77.5	72.3	84	SW	3.0	10	NULL	29.99	0	0			0
	2:15 AM	78.3	72.5	83	Calm	--	10	NULL	29.99	0	0			0
	2:35 AM	77.4	72.3	85	West	3.0	10	NULL	29.98	0	0			0
	2:55 AM	77.2	72.1	85	SW	3.0	10	NULL	29.98	0	0			0
	3:15 AM	77.0	71.6	83	West	5.0	10	NULL	29.98	0	0			0
	3:35 AM	76.3	72.7	89	West	5.0	10	NULL	29.97	0	0			0
	3:55 AM	75.9	72.3	89	West	3.0	10	NULL	29.97	0	0			0
	4:15 AM	75.2	72.3	91	West	3.0	10	NULL	29.97	0	0			0
	4:35 AM	75.2	71.6	89	Calm	--	10	NULL	29.97	0	0			0
	4:55 AM	74.5	72.0	92	Calm	--	10	NULL	29.98	0	0			0
	5:15 AM	74.3	72.1	93	Calm	--	10	NULL	29.98	0	0			0
	5:35 AM	74.1	72.1	94	Calm	--	10	NULL	29.99	0	0			0
	5:55 AM	72.5	71.2	96	North	5.0	10	NULL	30.01	0	0			0
	6:15 AM	71.8	70.9	97	North	5.0	10	NULL	30.01	0	0			0
	6:35 AM	71.8	70.5	96	Calm	--	10	NULL	30.02	0	0			0
6:55 AM	71.8	70.5	96	North	3.0	10	NULL	30.02	0	0	0			
7:15 AM	71.6	71.6	100	Calm	--	10	NULL	30.03	0	0	0			
Sunrise	6:35 AM													
5	Sunset	8:09 PM										1 - 15	Yes	
	7:35 PM	91.2	70.0	50	East	3.0	10	NULL	29.96	0	0			0
	7:55 PM	90.5	72.7	56	East	5.0	10	NULL	29.96	0	0			0
	8:15 PM	89.1	73.0	59	Calm	--	10	NULL	29.97	0	0			0
	8:35 PM	86.9	72.9	63	SE	7.0	10	NULL	29.97	0	0			0
	8:55 PM	86.7	73.4	65	South	3.0	10	NULL	29.98	0	0			0
	9:15 PM	86.5	73.9	66	South	5.0	10	NULL	29.98	0	0			0
	9:35 PM	86.4	73.8	66	SW	8.0	10	NULL	29.99	0	0			0
	9:55 PM	85.5	72.9	66	West	6.0	10	NULL	29.99	0	0			0
	10:15 PM	84.6	72.9	68	NW	7.0	10	NULL	30.00	0	0			0
	10:35 PM	83.8	73.2	70	North	5.0	10	NULL	30.01	0	0			0
	10:55 PM	83.5	73.0	71	NW	7.0	10	NULL	30.00	0	0			0
	11:15 PM	82.8	72.9	72	North	7.0	10	NULL	30.00	0	0			0
	11:35 PM	83.7	73.4	71	Calm	--	10	NULL	30.00	0	0			0
	11:55 PM	82.0	75.0	79	SE	5.0	10	NULL	30.00	0	0			0
	12:15 AM	81.5	75.2	81	SE	6.0	10	NULL	29.99	0	0			0
	12:35 AM	81.1	75.2	82	Calm	--	10	NULL	29.98	0	0			0
	12:55 AM	80.4	75.0	84	SE	5.0	10	NULL	29.98	0	0			0
	1:15 AM	78.4	74.3	87	Calm	--	10	NULL	29.97	0	0			0
	1:35 AM	78.3	74.5	88	Calm	--	10	NULL	29.97	0	0			0
	1:55 AM	76.8	73.4	89	South	5.0	10	NULL	29.96	0	0			0
	2:15 AM	77.0	72.3	86	South	3.0	10	NULL	29.96	0	0			0
	2:35 AM	77.0	72.1	85	South	6.0	10	NULL	29.95	0	0			0
	2:55 AM	76.5	72.1	87	South	5.0	10	NULL	29.94	0	0			0
	3:15 AM	76.3	72.1	87	SW	5.0	10	NULL	29.94	0	0			0
	3:35 AM	76.3	72.1	87	Calm	--	10	NULL	29.94	0	0			0
	3:55 AM	76.1	72.1	88	Calm	--	10	NULL	29.95	0	0			0
	4:15 AM	75.7	72.3	89	Calm	--	10	NULL	29.95	0	0			0
	4:35 AM	75.0	72.1	91	Calm	--	10	NULL	29.95	0	0			0
	4:55 AM	74.7	72.1	92	NW	5.0	10	NULL	29.96	0	0			0
	5:15 AM	75.2	71.6	89	Calm	--	10	NULL	29.96	0	0			0
	5:35 AM	73.6	72.0	95	Calm	--	10	NULL	29.97	0	0			0
	5:55 AM	73.8	72.3	95	Calm	--	10	NULL	29.97	0	0			0
	6:15 AM	73.4	71.6	94	Calm	--	10	NULL	29.97	0	0			0
	6:35 AM	72.5	72.0	98	Calm	--	5	Fog/Mist	29.98	0	0			0
6:55 AM	72.1	71.2	97	Calm	--	10	NULL	29.98	0	0	0			
7:15 AM	71.8	70.7	96	East	3.0	10	NULL	29.98	0	0	0			
Sunrise	6:34 AM													

6	Sunset	8:09 PM											1 - 15	Yes
	7:55 PM	89.2	70.5	54	SE	8.0	10	NULL	29.93	0	0	0		
	8:15 PM	87.8	69.8	55	SE	9.0	10	NULL	29.94	0	0	0		
	8:35 PM	87.1	71.6	60	SW	8.0	10	NULL	29.94	0	0	0		
	8:55 PM	86.2	71.1	61	South	9.0	10	NULL	29.95	0	0	0		
	9:15 PM	86.0	72.3	64	South	6.0	10	NULL	29.95	0	0	0		
	9:35 PM	85.8	73.9	68	South	3.0	10	NULL	29.96	0	0	0		
	9:55 PM	85.1	73.8	69	West	5.0	10	NULL	29.96	0	0	0		
	10:15 PM	85.1	73.2	68	West	6.0	10	NULL	29.96	0	0	0		
	10:35 PM	84.2	73.2	70	West	6.0	10	NULL	29.96	0	0	0		
	10:55 PM	83.1	73.6	73	South	8.0	10	NULL	29.97	0	0	0		
	11:15 PM	83.7	73.0	70	SW	5.0	10	NULL	29.97	0	0	0		
	11:35 PM	83.7	72.9	70	West	5.0	10	NULL	29.97	0	0	0		
	11:55 PM	83.1	73.2	72	Calm	--	10	NULL	29.97	0	0	0		
	12:15 AM	82.9	73.0	72	Calm	--	10	NULL	29.97	0	0	0		
	12:35 AM	82.2	73.0	74	Calm	--	10	NULL	29.96	0	0	0		
	12:55 AM	81.3	72.9	76	SW	3.0	10	NULL	29.96	0	0	0		
	1:15 AM	80.8	73.0	77	SW	5.0	10	NULL	29.96	0	0	0		
	1:35 AM	80.1	73.0	79	West	5.0	10	NULL	29.95	0	0	0		
	1:55 AM	79.5	73.0	81	West	6.0	10	NULL	29.94	0	0	0		
	2:15 AM	79.2	73.4	83	West	3.0	10	NULL	29.94	0	0	0		
	2:35 AM	77.0	72.7	87	SW	3.0	10	NULL	29.93	0	0	0		
	2:55 AM	77.4	73.0	87	SW	5.0	10	NULL	29.93	0	0	0		
	3:15 AM	77.0	73.4	89	West	5.0	10	NULL	29.92	0	0	0		
	3:35 AM	77.0	73.6	89	West	5.0	10	NULL	29.92	0	0	0		
	3:55 AM	76.3	73.4	91	Calm	--	10	NULL	0.00	0	0	0		
	4:15 AM	75.7	73.4	92	SW	7.0	10	NULL	29.91	0	0	0		
	4:35 AM	75.6	73.6	94	SW	7.0	10	NULL	29.91	0	0	0		
	5:15 AM	75.4	73.8	95	SW	5.0	0	NULL	29.92	0	0	0		
	5:35 AM	75.0	73.2	94	Calm	--	10	NULL	29.93	0	0	0		
	5:55 AM	74.8	73.4	95	SW	5.0	10	NULL	29.93	0	0	0		
	6:15 AM	74.7	73.6	96	SW	5.0	10	NULL	29.93	0	0	0		
	6:35 AM	74.7	73.6	96	SW	5.0	10	NULL	29.94	0	0	0		
	6:55 AM	73.9	72.7	96	SW	3.0	10	NULL	29.96	0	0	0		
7:15 AM	75.0	73.9	96	SW	5.0	10	NULL	29.97	0	0	0			
Sunrise	6:34 AM													

7	Sunset	8:10 PM											1 - 15	Yes
	7:35 PM	92.5	70.9	49	SW	9.0	10	NULL	29.92	0	0	0		
	7:55 PM	90.7	71.4	53	West	9.0	10	NULL	29.92	0	0	0		
	8:15 PM	89.1	66.2	47	West	9.0	10	NULL	29.93	0	0	0		
	8:35 PM	87.6	64.6	46	West	8.0	10	NULL	29.94	0	0	0		
	8:55 PM	86.2	64.4	48	West	7.0	10	NULL	29.94	0	0	0		
	9:15 PM	85.5	64.2	49	SW	5.0	10	NULL	29.95	0	0	0		
	9:35 PM	84.7	64.0	50	West	6.0	10	NULL	29.95	0	0	0		
	9:55 PM	83.8	64.4	52	West	6.0	10	NULL	29.96	0	0	0		
	10:15 PM	82.2	65.3	57	West	8.0	10	NULL	29.97	0	0	0		
	10:35 PM	81.0	65.7	60	West	6.0	10	NULL	29.97	0	0	0		
	10:55 PM	80.6	66.0	61	West	7.0	10	NULL	29.97	0	0	0		
	11:15 PM	79.5	66.6	65	West	6.0	10	NULL	29.97	0	0	0		
	11:35 PM	78.8	67.1	67	West	5.0	10	NULL	29.98	0	0	0		
	11:55 PM	78.6	68.2	70	West	7.0	10	NULL	29.98	0	0	0		
	12:15 AM	77.7	68.9	74	Calm	--	10	NULL	29.98	0	0	0		
	12:35 AM	77.5	69.4	76	West	6.0	10	NULL	29.97	0	0	0		
	12:55 AM	77.0	70.0	79	West	7.0	10	NULL	29.97	0	0	0		
	1:15 AM	76.6	70.3	81	West	6.0	10	NULL	29.97	0	0	0		
	1:35 AM	75.6	70.3	84	South	5.0	10	NULL	29.97	0	0	0		
	1:55 AM	75.6	70.9	85	Calm	--	10	NULL	29.97	0	0	0		
	2:15 AM	75.6	71.4	87	West	6.0	10	NULL	29.96	0	0	0		
	2:35 AM	74.8	71.8	90	Calm	--	10	NULL	29.96	0	0	0		
	2:55 AM	73.0	70.5	92	Calm	--	10	NULL	29.95	0	0	0		
	3:15 AM	73.6	71.2	92	SW	5.0	10	NULL	29.95	0	0	0		
	3:35 AM	73.4	71.4	94	West	5.0	10	NULL	29.95	0	0	0		
	3:55 AM	73.4	71.6	94	SW	6.0	10	NULL	29.95	0	0	0		
	4:15 AM	73.4	72.0	95	West	5.0	10	NULL	29.95	0	0	0		
	4:35 AM	73.0	72.0	96	Calm	--	10	NULL	29.95	0	0	0		
	4:55 AM	73.0	72.1	97	Calm	--	10	NULL	29.95	0	0	0		
	5:15 AM	72.1	71.2	97	Calm	--	10	NULL	29.96	0	0	0		
	5:35 AM	72.0	71.4	98	Calm	--	10	NULL	29.96	0	0	0		
	5:55 AM	72.3	71.8	98	West	3.0	10	NULL	29.96	0	0	0		
	6:15 AM	72.1	71.6	98	West	5.0	10	NULL	29.97	0	0	0		
6:35 AM	71.2	70.5	98	Calm	--	10	NULL	29.97	0	0	0			
6:55 AM	72.1	71.4	98	Calm	--	10	NULL	29.98	0	0	0			
7:15 AM	72.1	71.6	98	Calm	--	10	NULL	29.99	0	0	0			
Sunrise	6:33 AM													

8	Sunset	8:11 PM											1 - 15	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey
	7:35 PM	88.5	69.6	54	West	12.0	10	Partly Cloudy	29.94	0	0	0		
	7:55 PM	87.6	70.0	56	West	12.0	10	Fair	29.95	0	0	0		
	8:15 PM	86.7	70.9	59	West	10.0	10	Fair	29.96	0	0	0		
	8:35 PM	85.6	71.1	62	Calm	--	10	Fair	29.96	0	0	0		
	8:55 PM	84.6	71.2	64	West	10.0	10	Fair	29.97	0	0	0		
	9:15 PM	83.7	71.8	68	West	9.0	10	Fair	29.97	0	0	0		
	9:35 PM	82.4	71.6	70	Calm	--	10	Fair	29.97	0	0	0		
	9:55 PM	82.2	72.0	71	West	9.0	10	Fair	29.98	0	0	0		
	10:15 PM	81.5	72.0	73	West	8.0	10	Fair	29.98	0	0	0		
	10:35 PM	81.0	72.0	74	Calm	--	10	Fair	29.99	0	0	0		
	10:55 PM	80.6	71.6	74	West	9.0	10	Fair	29.98	0	0	0		
	11:15 PM	79.7	72.3	78	West	9.0	10	Fair	29.98	0	0	0		
	11:35 PM	79.5	72.7	80	West	8.0	10	Fair	29.97	0	0	0		
	11:55 PM	79.0	73.0	82	West	8.0	10	Fair	29.98	0	0	0		
	12:15 AM	78.8	73.6	84	West	7.0	10	Fair	29.98	0	0	0		
	12:35 AM	78.4	73.8	86	Calm	--	10	Fair	29.98	0	0	0		
	12:55 AM	78.8	73.4	84	West	5.0	10	Fair	29.98	0	0	0		
	1:15 AM	78.1	74.3	88	West	6.0	10	Fair	29.98	0	0	0		
	1:35 AM	77.7	74.3	89	West	6.0	10	Fair	29.97	0	0	0		
	1:55 AM	77.5	74.3	90	West	7.0	10	Fair	29.97	0	0	0		
	2:15 AM	77.4	74.3	90	West	7.0	10	Fair	29.96	0	0	0		
	2:35 AM	77.0	74.3	91	West	6.0	10	Fair	29.96	0	0	0		
	2:55 AM	76.8	74.3	92	West	5.0	10	Fair	29.95	0	0	0		
	3:15 AM	76.3	74.1	93	West	5.0	10	Fair	29.95	0	0	0		
	3:35 AM	76.1	74.1	94	West	5.0	10	Fair	29.94	0	0	0		
	3:55 AM	76.1	74.3	94	West	5.0	10	Fair	29.94	0	0	0		
	4:15 AM	75.4	74.1	96	West	5.0	10	Fair	29.94	0	0	0		
	4:35 AM	75.0	73.8	96	West	5.0	10	Fair	29.94	0	0	0		
	4:55 AM	75.0	73.8	96	West	5.0	10	Fair	29.94	0	0	0		
	5:15 AM	74.7	73.6	96	West	3.0	10	Fair	29.95	0	0	0		
	5:35 AM	74.5	73.6	97	Calm	--	10	Fair	29.95	0	0	0		
	5:55 AM	74.5	73.8	98	West	5.0	10	Fair	29.96	0	0	0		
	6:15 AM	74.5	73.8	98	Calm	--	10	Fair	29.97	0	0	0		
6:35 AM	74.3	73.8	98	West	5.0	7	Fair	29.98	0	0	0			
6:55 AM	74.5	73.9	98	West	3.0	7	Fair	29.99	0	0	0			
7:15 AM	75.0	74.3	98	Calm	--	7	Fair	30.00	0	0	0			
Sunrise	6:33 AM													

9	Sunset	8:11 PM												1 - 15	Yes		
	7:15 PM	77.5	72.1	84	NE	5.0	10	Fair	30.00	0	0	0					
	7:35 PM	76.5	71.4	84	NE	5.0	10	Fair	29.99	0	0	0					
	7:55 PM	76.1	71.1	84	East	3.0	10	Fair	30.00	0	0	0.19					
	8:15 PM	76.3	71.8	86	Calm	--	10	Fair	30.01	0	0	0					
	8:35 PM	75.2	71.6	89	SE	5.0	10	Fair	30.01	0	0	0					
	8:55 PM	75.4	71.8	89	SE	3.0	10	Fair	30.02	0	0	0					
	9:15 PM	76.1	70.7	83	SE	7.0	10	Fair	30.02	0	0	0					
	9:35 PM	76.3	70.9	83	East	3.0	10	Fair	30.04	0	0	0					
	9:55 PM	76.3	71.1	84	SE	14.0	10	Fair	30.03	0	0	0					
	10:15 PM	76.5	71.1	83	SE	8.0	10	Fair	30.04	0	0	0					
	10:35 PM	76.3	71.2	84	Calm	--	10	Fair	30.05	0	0	0					
	10:55 PM	74.8	71.1	88	Calm	--	10	Fair	30.05	0	0	0					
	11:15 PM	74.1	71.2	91	Calm	--	10	Fair	30.04	0	0	0					
	11:35 PM	74.3	71.4	91	East	3.0	0	Fair	30.04	0	0	0					
	11:55 PM	74.3	71.6	91	SE	3.0	10	Fair	30.02	0	0	0					
	12:15 AM	73.8	71.6	93	North	5.0	10	Fair	30.03	0	0	0					
	12:35 AM	73.8	72.0	94	North	5.0	10	Fair	30.04	0	0	0					
	12:55 AM	73.8	72.0	94	NW	3.0	10	Fair	30.04	0	0	0					
	1:15 AM	74.5	72.0	92	South	3.0	10	Fair	30.02	0	0	0					
	1:35 AM	73.9	72.3	95	Calm	--	10	Fair	30.02	0	0	0					
	1:55 AM	74.1	72.3	94	Calm	--	10	Fair	30.02	0	0	0					
	2:15 AM	74.3	72.3	94	Calm	--	10	Fair	30.02	0	0	0					
	2:35 AM	73.9	72.0	94	South	3.0	10	Fair	30.00	0	0	0					
	2:55 AM	73.8	72.0	94	North	3.0	10	Fair	30.00	0	0	0					
	3:15 AM	73.0	72.1	97	Calm	--	10	Fair	30.00	0	0	0					
	3:35 AM	73.4	72.1	96	North	3.0	10	Fair	30.00	0	0	0					
	3:55 AM	72.9	72.1	98	North	5.0	10	Fair	30.00	0	0	0					
	4:15 AM	72.7	71.8	97	NE	6.0	10	Fair	30.00	0	0	0					
	4:35 AM	72.5	71.8	98	NE	5.0	10	Fair	30.00	0	0	0					
	4:55 AM	72.5	71.6	97	Calm	--	10	Fair	30.01	0	0	0					
	5:15 AM	72.1	70.9	96	East	5.0	10	Fair	30.01	0	0	0					
	5:35 AM	72.0	70.5	95	East	5.0	10	Fair	30.01	0	0	0					
	5:55 AM	71.6	70.3	96	Calm	--	10	Fair	30.02	0	0	0					
	6:10 AM	71.2	70.2	96	NE	5.0	10	Fair	30.02	0	0	0					
	6:35 AM	70.9	70.0	97	Calm	--	7	Fog/Mist	30.03	0	0	0					
	6:55 AM	70.9	70.0	97	Calm	--	10	Fair	30.04	0	0	0					
	7:15 AM	71.2	70.3	97	NE	3.0	7	Fair	30.04	0	0	0					
	Sunrise	6:33 AM															
	Sunset	8:12 PM															
10	5/23/2025-5/24/2025	7:35 PM	81.7	72.0	72	East	8.0	10	Fair	30.03	0	0	0				
		7:55 PM	80.8	73.2	78	South	6.0	10	Fair	30.04	0	0	0				
		8:15 PM	79.5	73.4	82	South	3.0	10	Fair	30.04	0	0	0				
		8:35 PM	80.2	71.2	74	SE	13.0	10	Fair	30.06	0	0	0				
		8:55 PM	80.4	69.8	70	SE	10.0	10	Mostly Cloudy Thunderstorms in Vicinity	30.08	0	0	0				
		9:15 PM	79.2	71.8	78	South	17.0	10		30.10	0	0	0				
		9:35 PM	77.7	70.3	78	South	13.0	10	Partly Cloudy	30.10	0	0	0				
		9:55 PM	76.6	67.3	73	South	9.0	10	Fair	30.09	0	0	0				
		10:15 PM	76.3	66.7	72	SW	8.0	10	Fair	30.09	0	0	0				
		10:35 PM	75.4	67.3	76	Calm	--	10	Fair	30.09	0	0	0				
		10:55 PM	75.6	67.5	76	Calm	--	10	Fair	30.09	0	0	0				
		11:15 PM	73.6	68.0	83	NE	7.0	10	Fair	30.10	0	0	0				
		11:35 PM	73.2	68.4	85	NE	5.0	10	Fair	30.10	0	0	0				
		11:55 PM	73.4	68.9	86	Calm	--	10	Fair	30.10	0	0	0				
		12:15 AM	73.4	68.9	86	Calm	--	10	Fair	30.09	0	0	0				
		12:35 AM	72.7	68.5	87	Calm	--	10	Fair	30.09	0	0	0				
		12:55 AM	72.5	68.7	88	Calm	--	10	Fair	30.09	0	0	0				
		1:15 AM	71.6	68.0	88	Calm	--	10	Fair	0.00	0	0	0				
		1:35 AM	71.6	68.5	90	NE	5.0	10	Fair	30.09	0	0	0				
		1:55 AM	71.4	68.5	91	East	3.0	10	Fair	30.09	0	0	0				
		2:15 AM	71.4	68.4	90	Calm	--	10	Fair	30.08	0	0	0				
		2:35 AM	71.8	68.7	90	SE	3.0	10	Fair	30.08	0	0	0				
		2:55 AM	72.0	68.9	90	Calm	--	10	Fair	30.07	0	0	0				
		3:15 AM	72.5	69.1	89	Calm	--	10	Fair	30.06	0	0	0				
		3:35 AM	72.3	69.1	90	East	6.0	10	Fair	30.06	0	0	0				
		3:55 AM	72.3	69.3	90	East	3.0	10	Fair	30.07	0	0	0				
		4:15 AM	71.4	68.7	91	Calm	--	10	Fair	30.07	0	0	0				
		4:35 AM	71.2	68.7	92	Calm	--	10	Fair	30.07	0	0	0				
		4:55 AM	70.9	68.9	94	Calm	--	10	Fair	30.08	0	0	0				
		5:15 AM	70.5	68.7	94	East	5.0	10	Fair	30.07	0	0	0				
		5:35 AM	69.8	68.0	94	NE	3.0	10	Fair	30.08	0	0	0				
		5:55 AM	70.3	68.7	95	East	5.0	10	Fair	30.08	0	0	0				
		6:15 AM	70.9	69.1	94	Calm	--	10	Fair	30.09	0	0	0				
		6:35 AM	70.0	68.5	95	Calm	--	10	Fair	30.10	0	0	0				
		6:55 AM	69.3	68.4	97	North	3.0	10	Fair	30.10	0	0	0				
		7:15 AM	69.8	68.0	94	Calm	--	10	Fair	30.11	0	0	0				
		Sunrise	6:32 AM														
		Sunset	8:12 PM														
11	5/24/2025-5/25/2025	7:35 PM	71.6	69.8	94	Calm	--	10	Mostly Cloudy	30.16	0.01	0	0				
		8:15 PM	72.0	70.2	94	NE	8.0	10	Mostly Cloudy	30.14	0	0	0				
		8:35 PM	72.5	69.8	91	East	10.0	10	Overcast	30.14	0	0	0				
		8:55 PM	72.7	69.8	91	Calm	--	10	Overcast	30.14	0	0	0				
		9:15 PM	72.7	70.2	92	NW	8.0	10	Overcast	30.16	0	0	0				
		9:35 PM	73.0	70.3	91	East	7.0	5	Light Ra Fog/Mist	30.12	0.04	0	0				
		9:55 PM	72.0	70.0	94	South	8.0	7	Fog/Mist	30.11	0.04	0	0				
		10:15 PM	72.5	69.4	90	Calm	--	10	Partly Cloudy	30.10	0	0	0				
		10:35 PM	73.2	70.7	92	South	9.0	10	Fair	30.10	0	0	0				
		10:55 PM	72.7	70.5	93	South	7.0	10	Fair	30.11	0	0.04	0				
		11:15 PM	71.8	70.2	95	South	6.0	10	Fair	30.11	0	0	0				
		11:35 PM	71.8	69.8	94	SE	5.0	10	Fair	30.11	0	0	0				
		11:55 PM	71.4	70.5	97	Calm	--	10	Fair	30.12	0	0	0				
		12:15 AM	72.0	70.3	95	East	7.0	10	Fair	30.13	0	0	0				
		12:35 AM	70.7	69.4	96	NE	9.0	10	Fair	30.14	0	0	0				
		12:55 AM	70.7	69.1	95	East	3.0	10	Partly Cloudy	30.14	0	0	0				
		1:15 AM	70.3	68.7	95	NE	3.0	10	Mostly Cloudy	30.14	0	0	0				
		1:35 AM	69.8	68.0	94	Calm	--	10	Partly Cloudy	30.13	0	0	0				
		1:55 AM	70.5	68.4	93	Calm	--	10	Fair	30.13	0	0	0.04				
		2:15 AM	70.2	68.4	94	Calm	--	10	Fair	30.12	0	0	0				
		2:35 AM	70.3	68.4	93	Calm	--	10	Fair	30.12	0	0	0				
		2:55 AM	70.7	68.2	92	Calm	--	10	Fair	30.12	0	0	0				
		3:15 AM	70.5	68.2	92	Calm	--	10	Fair	30.11	0	0	0				
		3:35 AM	70.3	68.2	93	Calm	--	10	Fair	30.11	0	0	0				
		3:55 AM	70.0	68.2	94	NE	3.0	10	Fair	30.11	0	0	0				
		4:15 AM	70.5	68.5	93	East	3.0	10	Fair	30.11	0	0	0				
		4:35 AM	70.0	68.4	95	East	5.0	10	Fair	30.10	0	0	0				
		4:55 AM	69.6	68.5	96	East	3.0	10	Fair	30.11	0	0	0				
		5:15 AM	68.9	68.0	97	Calm	--	10	Fair	30.12	0	0	0				
		5:35 AM	69.6	68.9	98	Calm	--	0	NULL	30.12	0	0	0				
		5:55 AM	70.3	69.4	97	Calm	--	10	Fair	30.11	0	0	0				
		6:15 AM	70.9	70.0	97	Calm	--	10	Fair	30.12	0	0	0				
		6:35 AM	70.5	69.4	96	Calm	--	10	Fair	30.12	0	0	0				
		6:55 AM	69.3	68.9	99	Calm	--	7	Fair	30.12	0	0	0				
		7:15 AM	70.9	70.3	98	Calm	--	7	Fair	30.13	0	0	0				
		Sunrise	6:32 AM														

12	5/25/2025-5/26/2025	Sunset	8:13 PM										1 - 15	Yes	
		7:35 PM	81.0	72.5	76	North	6.0	10	Mostly Cloudy	30.10	0	0			0
		7:55 PM	79.9	72.3	78	North	6.0	10	Partly Cloudy	30.11	0	0			0.01
		8:15 PM	79.5	72.0	78	North	6.0	10	Partly Cloudy	30.12	0	0			0
		8:35 PM	77.9	85	85	North	8.0	10	Mostly Cloudy	30.13	0	0			0
		8:55 PM	77.5	73.0	86	North	8.0	10	Overcast	30.12	0	0			0
		9:15 PM	77.0	72.9	87	North	7.0	10	Mostly Cloudy	30.12	0	0			0
		9:35 PM	76.3	72.7	89	NE	7.0	10	Partly Cloudy	30.12	0	0			0
		9:55 PM	75.9	72.7	90	NE	6.0	10	Partly Cloudy	30.11	0	0			0
		10:15 PM	75.9	72.5	89	NE	3.0	10	Fair	30.12	0	0			0
		10:35 PM	76.1	72.7	89	Calm	--	10	Fair	30.12	0	0			0
		10:55 PM	76.3	72.3	88	Calm	--	10	Fair	30.12	0	0			0
		11:15 PM	75.9	72.3	89	East	3.0	10	Fair	30.11	0	0			0
		11:35 PM	75.2	72.3	91	East	3.0	10	Fair	30.11	0	0			0
		11:55 PM	74.3	72.3	94	NE	3.0	10	Fair	30.11	0	0			0
		12:15 AM	74.7	72.0	91	East	3.0	10	Fair	30.10	0	0			0
		12:35 AM	74.8	71.2	89	South	3.0	10	Fair	30.09	0	0			0
		12:55 AM	75.0	71.6	89	East	3.0	10	Fair	30.08	0	0			0
		1:15 AM	73.8	71.2	92	Calm	--	10	Fair	30.07	0	0			0
		1:35 AM	73.0	71.2	94	NE	3.0	10	Fair	30.07	0	0			0
		1:55 AM	73.4	71.4	94	East	3.0	10	Fair	30.06	0	0			0
		2:15 AM	72.3	70.9	95	NE	3.0	10	Fair	30.07	0	0			0
		2:35 AM	72.5	71.2	96	East	5.0	10	Fair	30.06	0	0			0
		2:55 AM	73.4	71.4	94	Calm	--	10	Fair	30.06	0	0			0
		3:15 AM	73.0	71.4	95	Calm	--	10	Fair	30.05	0	0			0
		3:35 AM	72.9	71.4	95	Calm	--	10	Fair	30.06	0	0			0
		3:55 AM	72.5	71.4	96	Calm	--	10	Fair	30.06	0	0			0
		4:15 AM	72.3	71.2	96	Calm	--	10	Partly Cloudy	30.07	0	0			0
		4:35 AM	72.1	71.1	96	Calm	--	10	Partly Cloudy	30.07	0	0			0
		4:55 AM	72.0	71.1	97	Calm	--	10	Fair	30.07	0	0			0
		5:15 AM	71.8	71.2	98	Calm	--	10	Fair	30.07	0	0			0
		5:35 AM	71.6	70.9	98	Calm	--	0	NULL	30.08	0	0			0
		5:55 AM	71.8	70.9	97	Calm	--	10	Fair	30.08	0	0			0
6:15 AM	71.6	70.7	97	SE	3.0	10	Fair	30.08	0	0	0				
6:35 AM	72.3	71.1	96	SE	3.0	1	Fog/Mist	30.08	0	0	0				
6:55 AM	73.4	71.6	95	Calm	--	0.75	Fog/Mist	30.08	0	0	0				
7:15 AM	72.7	71.6	96	Calm	--	7	Fair	30.09	0	0	0				
Sunrise		6:32 AM													

Appendix D - NOAA National Weather Service Data															
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters
											1 hr (in.)	3 hr (in.)	6 hr (in.)		
First Deployment - Stations 16-19															
1	Sunset	7:54 PM												16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey
	7:19 PM	79.5	65.3	62	ESE	14.9	NULL	NULL	29.90	0	0	0			
	7:28 PM	78.8	65.1	63	ESE	12.1	NULL	NULL	29.90	0	0	0			
	7:31 PM	78.6	64.9	63	E	10.1	NULL	NULL	29.91	0	0	0			
	7:39 PM	78.1	64.9	64	SE	13.5	NULL	NULL	29.91	0	0	0			
	7:49 PM	77.1	64.9	66	ESE	12.6	NULL	NULL	29.91	0	0	0			
	7:54 PM	76.9	64.7	66	ESE	11.7	NULL	NULL	29.92	0	0	0			
	7:57 PM	76.6	64.4	66	ESE	10.0	NULL	NULL	29.92	0	0	0			
	8:01 PM	76.5	64.7	67	ESE	9.6	NULL	NULL	29.91	0	0	0			
	8:08 PM	75.9	64.6	68	ESE	8.2	NULL	NULL	29.92	0	0	0			
	8:14 PM	75.6	64.3	68	ESE	8.5	NULL	NULL	29.91	0	0	0			
	8:19 PM	75.5	64.4	69	ESE	8.8	NULL	NULL	29.92	0	0	0			
	8:23 PM	75.1	64.2	69	ESE	8.4	NULL	NULL	29.92	0	0	0			
	8:27 PM	75.0	64.1	69	E	7.8	NULL	NULL	29.93	0	0	0			
	8:31 PM	74.8	64.3	70	E	9.6	NULL	NULL	29.92	0	0	0			
	8:38 PM	74.8	63.9	69	ESE	8.7	NULL	NULL	29.92	0	0	0			
	8:42 PM	74.8	63.9	69	ESE	13.0	NULL	NULL	29.92	0	0	0			
	8:47 PM	74.7	63.8	69	ESE	11.0	NULL	NULL	29.93	0	0	0			
	8:51 PM	74.7	63.8	69	SE	10.7	NULL	NULL	29.93	0	0	0			
	8:57 PM	74.3	63.9	70	SE	12.3	NULL	NULL	29.93	0	0	0			
	9:02 PM	74.1	64.1	71	ESE	10.3	NULL	NULL	29.94	0	0	0			
	9:09 PM	73.8	63.8	71	ESE	7.8	NULL	NULL	29.94	0	0	0			
	9:10 PM	73.8	63.8	71	ESE	7.4	NULL	NULL	29.94	0	0	0			
	9:17 PM	73.5	63.9	72	E	8.1	NULL	NULL	29.94	0	0	0			
	9:22 PM	73.0	63.4	72	E	8.5	NULL	NULL	29.94	0	0	0			
	9:26 PM	73.1	63.5	72	E	8.1	NULL	NULL	29.94	0	0	0			
	9:33 PM	72.9	63.7	73	E	6.5	NULL	NULL	29.94	0	0	0			
	9:40 PM	72.1	63.3	74	E	5.8	NULL	NULL	29.94	0	0	0			
	9:49 PM	72.1	63.7	75	E	6.6	NULL	NULL	29.95	0	0	0			
	9:51 PM	72.1	63.7	75	ESE	7.2	NULL	NULL	29.95	0	0	0			
	10:00 PM	72.3	63.9	75	SE	7.4	NULL	NULL	29.95	0	0	0			
	10:06 PM	72.5	63.7	74	ENE	7.2	NULL	NULL	29.95	0	0	0			
	10:10 PM	72.5	63.7	74	ENE	7.2	NULL	NULL	29.94	0	0	0			
	10:18 PM	72.1	63.7	75	ESE	4.7	NULL	NULL	29.96	0	0	0			
	10:22 PM	72.1	63.7	75	ESE	4.7	NULL	NULL	29.96	0	0	0			
	10:34 PM	72.1	63.7	75	ESE	4.7	NULL	NULL	29.96	0	0	0			
	10:42 PM	72.1	63.7	75	ESE	4.7	NULL	NULL	29.95	0	0	0			
	10:45 PM	70.7	63.5	78	E	4.9	NULL	NULL	29.96	0	0	0			
	10:54 PM	70.7	63.5	78	E	4.9	NULL	NULL	29.96	0	0	0			
	10:58 PM	70.7	63.5	78	E	4.9	NULL	NULL	29.96	0	0	0			
	11:06 PM	70.7	63.5	78	E	4.9	NULL	NULL	29.96	0	0	0			
	11:13 PM	70.7	63.5	78	E	4.9	NULL	NULL	29.96	0	0	0			
	11:18 PM	69.3	63.2	81	ENE	3.1	NULL	NULL	29.97	0	0	0			
	11:29 PM	69.1	63.4	82	ESE	3.1	NULL	NULL	29.96	0	0	0			
	11:34 PM	68.8	63.2	83	E	3.7	NULL	NULL	29.96	0	0	0			
	11:37 PM	68.5	63.1	83	E	4.3	NULL	NULL	29.96	0	0	0			
	11:40 PM	68.5	63.1	83	ESE	3.4	NULL	NULL	29.97	0	0	0			
	11:45 PM	68.5	63.1	83	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:57 PM	68.0	63.0	84	E	2.5	NULL	NULL	29.96	0	0	0			
	12:04 AM	67.9	62.9	84	ESE	2.4	NULL	NULL	29.96	0	0	0			
	12:08 AM	67.8	63.1	85	ESE	1.6	NULL	NULL	29.96	0	0	0			
	12:14 AM	67.8	63.1	85	ESE	2.0	NULL	NULL	29.96	0	0	0			
	12:16 AM	67.8	63.1	85	ESE	2.0	NULL	NULL	29.96	0	0	0			
	12:24 AM	67.4	62.9	86	ESE	2.3	NULL	NULL	29.96	0	0	0			
	12:28 AM	67.1	62.8	86	E	2.7	NULL	NULL	29.96	0	0	0			
	12:32 AM	67.0	62.8	87	NE	2.9	NULL	NULL	29.96	0	0	0			
	12:39 AM	67.1	62.8	86	NNE	0.0	NULL	NULL	29.96	0	0	0			
	12:43 AM	67.1	63.1	87	ENE	3.6	NULL	NULL	29.96	0	0	0			
	12:48 AM	66.9	62.9	87	SE	1.1	NULL	NULL	29.96	0	0	0			
	12:54 AM	66.7	63.0	88	E	3.1	NULL	NULL	29.96	0	0	0			
	12:58 AM	66.4	62.7	88	E	3.1	NULL	NULL	29.96	0	0	0			
	1:01 AM	66.2	62.5	88	SE	2.0	NULL	NULL	29.95	0	0	0			
	1:08 AM	66.2	62.9	89	ESE	1.9	NULL	NULL	29.96	0	0	0			
	1:19 AM	65.9	62.6	89	ENE	0.9	NULL	NULL	29.95	0	0	0			
	1:22 AM	65.8	62.5	89	ENE	4.0	NULL	NULL	29.96	0	0	0			
	1:38 AM	65.8	62.8	90	ENE	2.2	NULL	NULL	29.95	0	0	0			
	1:42 AM	65.8	62.8	90	ENE	2.2	NULL	NULL	29.94	0	0	0			
	1:49 AM	65.5	62.6	91	ENE	1.3	NULL	NULL	29.95	0	0	0			
	1:53 AM	65.4	62.6	91	ENE	2.5	NULL	NULL	29.95	0	0	0			
	2:01 AM	65.1	62.4	91	NE	2.7	NULL	NULL	29.95	0	0	0			
	2:12 AM	65.1	62.7	92	ENE	2.9	NULL	NULL	29.94	0	0	0			
	2:24 AM	65.1	62.7	92	ENE	2.0	NULL	NULL	29.94	0	0	0			
	2:36 AM	65.1	62.7	92	E	1.8	NULL	NULL	29.94	0	0	0			
	2:44 AM	64.8	62.4	92	E	2.0	NULL	NULL	29.94	0	0	0			
	2:59 AM	64.9	62.8	93	NE	2.9	NULL	NULL	29.93	0	0	0			
	3:04 AM	65.1	63.0	93	NE	1.6	NULL	NULL	29.93	0	0	0			
	3:09 AM	64.9	62.8	93	NE	1.4	NULL	NULL	29.93	0	0	0			
	3:14 AM	65.1	63.3	94	NE	1.9	NULL	NULL	29.93	0	0	0			
	3:19 AM	65.1	63.3	94	NE	2.5	NULL	NULL	29.93	0	0	0			
	3:24 AM	65.1	63.3	94	ENE	1.8	NULL	NULL	29.93	0	0	0			
	3:40 AM	64.8	63.0	94	NE	0.0	NULL	NULL	29.91	0	0	0			
	3:52 AM	64.4	62.6	94	ENE	1.3	NULL	NULL	29.92	0	0	0			
	3:55 AM	64.6	62.8	94	ENE	1.8	NULL	NULL	29.92	0	0	0			
	4:13 AM	64.2	62.6	95	ENE	2.2	NULL	NULL	29.92	0	0	0			
	4:18 AM	64.0	62.5	95	ENE	2.7	NULL	NULL	29.92	0	0	0			
	4:22 AM	64.0	62.5	95	E	1.5	NULL	NULL	29.92	0	0	0			
	4:25 AM	64.0	62.5	95	ESE	1.3	NULL	NULL	29.92	0	0	0			
	4:34 AM	64.2	62.7	95	ENE	2.6	NULL	NULL	29.92	0	0	0			
	4:38 AM	64.0	62.5	95	ENE	1.3	NULL	NULL	29.92	0	0	0			
	4:46 AM	63.5	62.0	95	ENE	1.3	NULL	NULL	29.92	0	0	0			
4:53 AM	63.7	62.2	95	ENE	2.0	NULL	NULL	29.92	0	0	0				
5:04 AM	63.6	62.1	95	NE	1.7	NULL	NULL	29.92	0	0	0				
5:05 AM	63.7	62.2	95	NE	2.0	NULL	NULL	29.92	0	0	0				
5:12 AM	63.7	62.5	96	NE	2.2	NULL	NULL	29.93	0	0	0				
5:19 AM	63.7	62.2	95	E	2.0	NULL	NULL	29.93	0	0	0				
5:27 AM	63.3	61.8	95	NE	1.6	NULL	NULL	29.93	0	0	0				
5:51 AM	63.1	61.9	96	ENE	2.5	NULL	NULL	29.93	0	0	0				
5:59 AM	62.8	61.6	96	ENE	2.0	NULL	NULL	29.93	0	0	0				
6:03 AM	62.8	61.6	96	ENE	1.3	NULL	NULL	29.93	0	0	0				
6:06 AM	62.8	61.6	96	NE	1.3	NULL	NULL	29.93	0	0	0				
6:14 AM	62.9	61.7	96	ENE	1.5	NULL	NULL	29.94	0	0	0				
6:17 AM	63.0	61.8	96	NE	1.1	NULL	NULL	29.94	0	0	0				
6:24 AM	63.0	61.8	96	NE	1.5	NULL	NULL	29.94	0	0	0				
6:28 AM	63.1	61.9	96	ENE	2.0	NULL	NULL	29.94	0	0	0				
6:37 AM	63.1	61.9	96	ENE	2.0	NULL	NULL	29.94	0	0	0				
6:48 AM	63.1	61.9	96	ENE	2.0	NULL	NULL	29.94	0	0	0				
6:52 AM	63.3	62.1	96	ENE	2.5	NULL	NULL	29.94	0	0	0				
7:02 AM	62.6	61.4	96	NE	2.2	NULL	NULL	29.94	0	0	0				
7:06 AM	62.6	61.4	96	NE	2.2	NULL	NULL	29.95	0	0	0				
7:13 AM	63.3	62.4	97	NNE	2.2	NULL	NULL	29.96	0	0	0				
7:21 AM	63.3	62.4	97	NNE	2.2	NULL	NULL	29.96	0	0	0				
7:31 AM	63.9	63.0	97	NE	2.0	NULL	NULL	29.96	0	0	0				
Sunrise	6:53 AM														

Appendix D - NOAA National Weather Service Data																
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters	
											1 hr (in.)	3 hr (in.)	6 hr (in.)			
2	Sunset	7:54 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey
	7:21 PM	82.8	64.4	54	ESE	7.1	NULL	NULL	29.91	0	0	0				
	7:27 PM	82.6	64.8	55	ESE	4.9	NULL	NULL	29.91	0	0	0				
	7:34 PM	82.3	64.5	55	ESE	6.6	NULL	NULL	29.91	0	0	0				
	7:38 PM	82.1	65.1	57	E	11.6	NULL	NULL	29.92	0	0	0				
	7:41 PM	81.5	65.3	58	ESE	12.5	NULL	NULL	29.92	0	0	0				
	7:49 PM	80.9	65.6	60	ESE	10.2	NULL	NULL	29.92	0	0	0				
	7:54 PM	80.5	65.3	60	E	12.0	NULL	NULL	29.92	0	0	0				
	7:58 PM	80.2	65.5	61	E	8.1	NULL	NULL	29.92	0	0	0				
	8:04 PM	79.7	65.5	62	E	12.7	NULL	NULL	29.93	0	0	0				
	8:08 PM	79.4	65.3	62	ESE	13.4	NULL	NULL	29.93	0	0	0				
	8:11 PM	79.2	65.0	62	E	11.9	NULL	NULL	29.93	0	0	0				
	8:19 PM	78.9	65.4	63	E	12.4	NULL	NULL	29.93	0	0	0				
	8:24 PM	78.3	65.3	65	E	10.4	NULL	NULL	29.93	0	0	0				
	8:26 PM	77.9	65.2	65	E	10.3	NULL	NULL	29.93	0	0	0				
	8:33 PM	77.5	65.2	66	E	10.5	NULL	NULL	29.94	0	0	0				
	8:38 PM	76.9	64.9	67	E	9.7	NULL	NULL	29.94	0	0	0				
	8:44 PM	76.7	64.8	67	E	9.0	NULL	NULL	29.94	0	0	0				
	8:48 PM	76.3	64.9	68	E	7.8	NULL	NULL	29.94	0	0	0				
	8:59 PM	75.6	64.7	69	E	8.9	NULL	NULL	29.95	0	0	0				
	9:02 PM	75.4	64.5	69	E	9.1	NULL	NULL	29.95	0	0	0				
	9:06 PM	75.2	64.3	69	E	9.4	NULL	NULL	29.96	0	0	0				
	9:14 PM	74.8	64.3	70	ESE	8.3	NULL	NULL	29.96	0	0	0				
	9:18 PM	74.5	64.1	70	E	7.1	NULL	NULL	29.96	0	0	0				
	9:24 PM	73.9	63.9	71	E	6.9	NULL	NULL	29.96	0	0	0				
	9:28 PM	73.8	64.1	72	E	8.4	NULL	NULL	29.96	0	0	0				
	9:31 PM	73.6	64.0	72	E	7.8	NULL	NULL	29.96	0	0	0				
	9:39 PM	73.3	63.7	72	E	9.2	NULL	NULL	29.96	0	0	0				
	9:43 PM	73.1	63.7	73	E	9.1	NULL	NULL	29.96	0	0	0				
	9:49 PM	72.9	63.7	73	E	8.3	NULL	NULL	29.96	0	0	0				
	9:54 PM	72.8	63.8	74	ESE	9.8	NULL	NULL	29.96	0	0	0				
	9:59 PM	72.6	63.9	74	E	8.9	NULL	NULL	29.96	0	0	0				
	10:04 PM	72.4	63.6	74	E	9.6	NULL	NULL	29.96	0	0	0				
	10:06 PM	72.3	63.5	74	E	9.8	NULL	NULL	29.96	0	0	0				
	10:14 PM	72.1	63.7	75	E	9.3	NULL	NULL	29.97	0	0	0				
	10:18 PM	72.1	63.7	75	E	9.2	NULL	NULL	29.97	0	0	0				
	10:23 PM	71.8	63.8	76	E	9.2	NULL	NULL	29.97	0	0	0				
	10:29 PM	71.8	63.8	76	E	9.2	NULL	NULL	29.97	0	0	0				
	10:34 PM	71.4	63.4	76	E	8.7	NULL	NULL	29.97	0	0	0				
	10:38 PM	71.2	63.6	77	E	9.2	NULL	NULL	29.97	0	0	0				
	10:41 PM	71.2	63.6	77	E	9.2	NULL	NULL	29.97	0	0	0				
	10:48 PM	70.9	63.7	78	ESE	10.7	NULL	NULL	29.97	0	0	0				
	10:54 PM	70.9	63.7	78	ESE	10.7	NULL	NULL	29.97	0	0	0				
	11:01 PM	70.7	63.9	79	E	7.8	NULL	NULL	29.97	0	0	0				
	11:09 PM	70.7	63.9	79	E	7.8	NULL	NULL	29.97	0	0	0				
	11:13 PM	70.7	63.9	79	E	7.8	NULL	NULL	29.97	0	0	0				
	11:18 PM	70.3	63.8	80	E	8.2	NULL	NULL	29.97	0	0	0				
	11:24 PM	70.3	63.8	80	E	9.0	NULL	NULL	29.97	0	0	0				
	11:28 PM	70.1	63.9	81	E	9.3	NULL	NULL	29.97	0	0	0				
	11:30 PM	69.8	64.0	82	E	8.1	NULL	NULL	29.97	0	0	0				
	11:36 PM	69.8	64.0	82	E	8.1	NULL	NULL	29.98	0	0	0				
	11:44 PM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	11:52 PM	69.4	64.0	83	E	9.8	NULL	NULL	29.98	0	0	0				
	11:57 PM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	12:03 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.96	0	0	0				
	12:07 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	12:14 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.98	0	0	0				
	12:19 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	12:22 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	12:29 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	12:34 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.98	0	0	0				
	12:37 AM	69.4	64.0	83	E	9.8	NULL	NULL	29.97	0	0	0				
	12:44 AM	--	--	--	N	--	NULL	NULL	29.97	0	0	0				
	12:59 AM	--	--	--	N	--	NULL	NULL	29.97	0	0	0				
	1:07 AM	--	--	--	N	--	NULL	NULL	29.97	0	0	0				
	1:13 AM	67.5	64.1	89	ESE	6.0	NULL	NULL	29.96	0	0	0				
	1:17 AM	67.5	64.1	89	ESE	6.0	NULL	NULL	29.96	0	0	0				
	1:21 AM	67.5	64.5	90	ESE	5.8	NULL	NULL	29.96	0	0	0				
	1:29 AM	67.5	64.1	89	E	5.4	NULL	NULL	29.97	0	0	0				
	1:34 AM	67.3	64.1	90	ESE	5.4	NULL	NULL	29.96	0	0	0				
	1:39 AM	67.3	64.3	90	E	4.0	NULL	NULL	29.96	0	0	0				
	1:42 AM	67.1	64.1	90	E	3.6	NULL	NULL	29.96	0	0	0				
	1:48 AM	67.1	64.1	90	E	2.8	NULL	NULL	29.96	0	0	0				
	2:03 AM	67.1	64.4	91	E	3.8	NULL	NULL	29.96	0	0	0				
	2:09 AM	67.1	64.4	91	E	3.8	NULL	NULL	29.96	0	0	0				
	2:14 AM	67.1	64.4	91	E	3.8	NULL	NULL	29.96	0	0	0				
	2:19 AM	66.9	64.2	91	E	4.1	NULL	NULL	29.96	0	0	0				
	2:22 AM	66.7	64.0	91	E	4.4	NULL	NULL	29.96	0	0	0				
	2:29 AM	66.6	63.9	91	E	4.1	NULL	NULL	29.95	0	0	0				
	2:33 AM	66.5	63.8	91	E	3.8	NULL	NULL	29.95	0	0	0				
	2:36 AM	66.5	63.8	91	E	4.0	NULL	NULL	29.95	0	0	0				
	2:44 AM	66.6	63.9	91	E	3.8	NULL	NULL	29.95	0	0	0				
	2:47 AM	66.6	63.9	91	E	3.8	NULL	NULL	29.95	0	0	0				
	2:59 AM	66.6	63.9	91	E	4.3	NULL	NULL	29.94	0	0	0				
	3:03 AM	66.4	63.7	91	ESE	5.1	NULL	NULL	29.94	0	0	0				
	3:09 AM	66.3	63.6	91	E	4.8	NULL	NULL	29.94	0	0	0				
	3:11 AM	66.2	63.5	91	E	4.9	NULL	NULL	29.94	0	0	0				
	3:22 AM	66.0	63.3	91	E	2.2	NULL	NULL	29.94	0	0	0				
	3:28 AM	66.1	63.4	91	E	3.7	NULL	NULL	29.94	0	0	0				
	3:35 AM	66.0	63.3	91	E	5.1	NULL	NULL	29.94	0	0	0				
	3:42 AM	65.7	63.3	92	E	3.4	NULL	NULL	29.94	0	0	0				
	3:49 AM	65.7	63.0	91	ENE	3.6	NULL	NULL	29.94	0	0	0				
	3:50 AM	65.7	63.0	91	ENE	3.4	NULL	NULL	29.94	0	0	0				
	4:08 AM	64.9	62.5	92	ENE	4.8	NULL	NULL	29.94	0	0	0				
	4:14 AM	64.7	62.5	93	E	4.6	NULL	NULL	29.94	0	0	0				
	4:18 AM	64.5	62.4	93	ENE	5.0	NULL	NULL	29.94	0	0	0				
	4:22 AM	64.2	62.1	93	ENE	6.3	NULL	NULL	29.94	0	0	0				
	4:26 AM	64.0	62.2	94	ENE	5.6	NULL	NULL	29.94	0	0	0				
	4:34 AM	64.2	62.4	94	NE	5.8	NULL	NULL	29.94	0	0	0				
	4:44 AM	64.0	62.2	94	ENE	3.6	NULL	NULL	29.94	0	0	0				
4:49 AM	63.9	62.1	94	ENE	3.8	NULL	NULL	29.94	0	0	0					
4:58 AM	63.9	62.1	94	E	3.1	NULL	NULL	29.94	0	0	0					
5:01 AM	63.7	61.9	94	E	4.0	NULL	NULL	29.95	0	0	0					
5:09 AM	63.8	62.3	95	E	3.6	NULL	NULL	29.94	0	0	0					
5:12 AM	63.7	62.2	95	ENE	3.8	NULL	NULL	29.94	0	0	0					
5:17 AM	63.9	62.4	95	ENE	4.0	NULL	NULL	29.95	0	0	0					
5:24 AM	63.8	62.3	95	ENE	4.5	NULL	NULL	29.95	0	0	0					
5:28 AM	63.5	62.0	95	ENE	4.5	NULL	NULL	29.94	0	0	0					
5:32 AM	63.3	61.8	95	ENE	3.8	NULL	NULL	29.94	0	0	0					
5:35 AM	63.3	61.8	95	ENE	3.6	NULL	NULL	29.94	0	0	0					
5:43 AM	63.3	61.8	95	ENE	4.0	NULL	NULL	29.95	0	0	0					
5:48 AM	63.0	61.5	95	E	3.8	NULL	NULL	29.95	0	0	0					
5:50 AM	62.8	61.3	95	ENE	3.1	NULL	NULL	29.94	0	0	0					
5:59 AM	62.9	61.6	96	ENE	3.1	NULL	NULL	29.95	0	0	0					
6:03 AM	63.1	61.9	96	NE	3.0	NULL	NULL	29.95	0	0	0					
6:07 AM	63.3	62.1	96	NNE	2.0	NULL	NULL	29.95	0	0	0					
6:14 AM	63.4	62.2	96	NE	1.9	NULL	NULL	29.96	0	0	0					
6:18 AM	63.3	62.1	96	NNE	2.5	NULL	NULL	29.95	0	0	0					
6:21 AM	63.5	62.3	96	NNE	2.9	NULL	NULL	29.96	0	0	0					
6:28 AM	63.4	62.2	96	NE	2.6	NULL	NULL	29.95	0	0	0					
6:31 AM	63.1	61.9	96	NE	2.2	NULL	NULL	29.96	0	0						

Appendix D - NOAA National Weather Service Data																
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters	
											1 hr (in.)	3 hr (in.)	6 hr (in.)			
3	Sunset	7:55 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey
	7:17 PM	80.4	63.2	56	ENE	9.4	NULL	NULL	29.92	0	0	0				
	7:27 PM	79.7	63.6	58	E	11.2	NULL	NULL	29.93	0	0	0				
	7:31 PM	79.5	63.9	59	E	8.7	NULL	NULL	29.93	0	0	0				
	7:39 PM	79.1	63.7	59	E	9.9	NULL	NULL	29.93	0	0	0				
	7:57 PM	77.7	63.6	62	E	12.1	NULL	NULL	29.93	0	0	0				
	8:04 PM	77.4	63.8	63	E	10.2	NULL	NULL	29.94	0	0	0				
	8:09 PM	77.2	64.1	64	ENE	11.4	NULL	NULL	29.94	0	0	0				
	8:11 PM	76.8	63.7	64	ENE	13.2	NULL	NULL	29.94	0	0	0				
	8:22 PM	76.5	63.8	65	E	10.5	NULL	NULL	29.94	0	0	0				
	8:29 PM	76.1	64.1	67	ENE	11.5	NULL	NULL	29.95	0	0	0				
	8:30 PM	75.9	64.1	67	E	12.5	NULL	NULL	29.94	0	0	0				
	8:39 PM	75.5	64.6	69	E	11.3	NULL	NULL	29.95	0	0	0				
	8:51 PM	75.0	64.5	70	E	14.8	NULL	NULL	29.96	0	0	0				
	9:02 PM	74.3	64.7	72	ENE	13.0	NULL	NULL	29.95	0	0	0				
	9:08 PM	74.3	64.7	72	ENE	13.7	NULL	NULL	29.95	0	0	0				
	9:14 PM	73.9	64.7	73	E	13.2	NULL	NULL	29.96	0	0	0				
	9:18 PM	73.8	65.0	74	ENE	11.1	NULL	NULL	29.96	0	0	0				
	9:24 PM	73.7	64.9	74	E	11.1	NULL	NULL	29.96	0	0	0				
	9:28 PM	73.5	64.9	75	E	11.2	NULL	NULL	29.97	0	0	0				
	9:32 PM	73.2	64.8	75	E	9.4	NULL	NULL	29.96	0	0	0				
	9:39 PM	73.1	64.9	76	E	10.4	NULL	NULL	29.97	0	0	0				
	9:40 PM	73.0	65.0	76	E	9.8	NULL	NULL	29.97	0	0	0				
	9:47 PM	72.7	64.9	77	E	10.4	NULL	NULL	29.97	0	0	0				
	9:53 PM	72.7	65.1	77	E	13.1	NULL	NULL	29.98	0	0	0				
	9:56 PM	72.5	64.9	77	E	12.8	NULL	NULL	29.97	0	0	0				
	10:06 PM	72.1	64.9	78	ESE	9.4	NULL	NULL	29.98	0	0	0				
	10:11 PM	72.1	64.9	78	E	9.0	NULL	NULL	29.98	0	0	0				
	10:15 PM	71.8	64.9	79	E	8.7	NULL	NULL	29.98	0	0	0				
	10:29 PM	71.5	64.8	80	E	8.5	NULL	NULL	29.98	0	0	0				
	10:33 PM	71.4	64.9	80	E	11.0	NULL	NULL	29.98	0	0	0				
	10:37 PM	71.2	64.7	80	E	8.8	NULL	NULL	29.98	0	0	0				
	10:44 PM	71.2	64.8	81	E	7.9	NULL	NULL	29.98	0	0	0				
	10:47 PM	71.1	65.0	81	E	12.1	NULL	NULL	29.98	0	0	0				
	10:53 PM	70.9	64.8	81	E	9.2	NULL	NULL	29.98	0	0	0				
	10:55 PM	70.7	64.9	82	E	9.4	NULL	NULL	29.98	0	0	0				
	11:07 PM	70.3	64.9	83	E	7.2	NULL	NULL	29.99	0	0	0				
	11:12 PM	70.3	64.9	83	E	7.4	NULL	NULL	29.99	0	0	0				
	11:19 PM	70.2	64.7	83	ENE	6.2	NULL	NULL	29.99	0	0	0				
	11:23 PM	70.0	64.6	83	ENE	6.5	NULL	NULL	29.99	0	0	0				
	11:26 PM	69.8	64.7	84	E	5.8	NULL	NULL	29.98	0	0	0				
	11:34 PM	69.4	64.3	84	ENE	6.0	NULL	NULL	29.99	0	0	0				
	11:44 PM	69.1	64.4	85	ENE	8.5	NULL	NULL	29.99	0	0	0				
	11:48 PM	69.1	64.4	85	ENE	7.8	NULL	NULL	29.98	0	0	0				
	11:52 PM	68.9	64.5	86	ENE	8.1	NULL	NULL	29.98	0	0	0				
	11:56 PM	68.7	64.3	86	E	6.9	NULL	NULL	29.99	0	0	0				
	12:00 AM	68.5	64.1	86	E	6.9	NULL	NULL	29.98	0	0	0				
	12:06 AM	68.4	64.0	86	ENE	6.2	NULL	NULL	29.98	0	0	0				
	12:14 AM	68.2	64.2	87	E	6.5	NULL	NULL	29.98	0	0	0				
	12:18 AM	68.2	64.2	87	ENE	6.4	NULL	NULL	29.98	0	0	0				
	12:25 AM	68.0	64.0	87	ENE	6.3	NULL	NULL	29.98	0	0	0				
	12:33 AM	67.6	63.9	88	E	5.8	NULL	NULL	29.98	0	0	0				
	12:39 AM	67.3	63.6	88	E	6.0	NULL	NULL	29.98	0	0	0				
	12:54 AM	66.8	63.4	89	ENE	6.6	NULL	NULL	29.98	0	0	0				
	1:04 AM	66.4	63.4	90	ENE	6.4	NULL	NULL	29.97	0	0	0				
	1:08 AM	66.4	63.4	90	ENE	6.5	NULL	NULL	29.97	0	0	0				
	1:16 AM	66.2	63.5	91	ENE	6.9	NULL	NULL	29.97	0	0	0				
	1:23 AM	66.2	63.5	91	ENE	7.6	NULL	NULL	29.97	0	0	0				
	1:26 AM	66.2	63.5	91	ENE	7.8	NULL	NULL	29.97	0	0	0				
	1:33 AM	66.2	63.5	91	ENE	7.8	NULL	NULL	29.96	0	0	0				
	1:37 AM	66.4	63.7	91	ENE	9.0	NULL	NULL	29.96	0	0	0				
	1:44 AM	66.4	63.7	91	ENE	8.1	NULL	NULL	29.96	0	0	0				
	1:47 AM	66.4	63.7	91	ENE	7.4	NULL	NULL	29.96	0	0	0				
	1:51 AM	66.2	63.5	91	ENE	7.4	NULL	NULL	29.96	0	0	0				
	2:02 AM	66.2	63.5	91	E	7.2	NULL	NULL	29.96	0	0	0				
	2:06 AM	66.0	63.3	91	ENE	8.6	NULL	NULL	29.96	0	0	0				
	2:10 AM	66.0	63.3	91	ENE	8.5	NULL	NULL	29.96	0	0	0				
	2:15 AM	65.8	63.1	91	ENE	8.7	NULL	NULL	29.95	0	0	0				
	2:21 AM	65.7	63.0	91	ENE	6.0	NULL	NULL	29.95	0	0	0				
	2:29 AM	65.5	63.1	92	ENE	7.5	NULL	NULL	29.96	0	0	0				
	2:33 AM	65.3	62.9	92	ENE	6.5	NULL	NULL	29.95	0	0	0				
	2:38 AM	65.2	62.8	92	ENE	5.3	NULL	NULL	29.95	0	0	0				
	2:44 AM	65.0	62.6	92	ENE	5.5	NULL	NULL	29.96	0	0	0				
	2:49 AM	64.9	62.5	92	ENE	6.2	NULL	NULL	29.95	0	0	0				
	2:59 AM	64.9	62.8	93	E	4.9	NULL	NULL	29.95	0	0	0				
	3:07 AM	64.8	62.7	93	ENE	5.6	NULL	NULL	29.95	0	0	0				
	3:13 AM	64.8	62.7	93	ENE	5.1	NULL	NULL	29.94	0	0	0				
	3:19 AM	64.8	62.7	93	ENE	4.5	NULL	NULL	29.94	0	0	0				
	3:24 AM	64.6	62.5	93	ENE	4.1	NULL	NULL	29.94	0	0	0				
	3:28 AM	64.6	62.5	93	ENE	4.7	NULL	NULL	29.94	0	0	0				
	3:31 AM	64.6	62.5	93	E	4.3	NULL	NULL	29.95	0	0	0				
	3:37 AM	64.6	62.5	93	ENE	4.7	NULL	NULL	29.94	0	0	0				
	3:43 AM	64.5	62.5	93	ENE	4.8	NULL	NULL	29.94	0	0	0				
	3:52 AM	64.6	62.8	94	ENE	4.5	NULL	NULL	29.94	0	0	0				
	3:58 AM	64.6	62.8	94	ENE	5.4	NULL	NULL	29.95	0	0	0				
	4:02 AM	64.8	63.0	94	ENE	5.8	NULL	NULL	29.94	0	0	0				
	4:07 AM	64.6	62.8	94	ENE	8.1	NULL	NULL	29.95	0	0	0				
	4:15 AM	64.8	63.0	94	ENE	6.0	NULL	NULL	29.94	0	0	0				
	4:22 AM	64.6	62.8	94	ENE	7.2	NULL	NULL	29.95	0	0	0				
	4:25 AM	64.8	63.0	94	ENE	6.0	NULL	NULL	29.95	0	0	0				
4:38 AM	64.5	62.8	94	ENE	5.4	NULL	NULL	29.95	0	0	0					
4:44 AM	64.5	62.7	94	ENE	6.0	NULL	NULL	29.95	0	0	0					
4:49 AM	64.5	62.7	94	ENE	5.8	NULL	NULL	29.95	0	0	0					
4:52 AM	64.6	62.8	94	E	6.3	NULL	NULL	29.95	0	0	0					
4:59 AM	64.8	63.0	94	E	6.6	NULL	NULL	29.95	0	0	0					
5:01 AM	64.9	63.1	94	E	7.8	NULL	NULL	29.95	0	0	0					
5:08 AM	64.8	63.0	94	ENE	5.7	NULL	NULL	29.95	0	0	0					
5:13 AM	64.6	62.8	94	ENE	5.6	NULL	NULL	29.95	0	0	0					
5:19 AM	64.4	62.6	94	ENE	5.8	NULL	NULL	29.95	0	0	0					
5:29 AM	64.6	62.8	94	ENE	6.6	NULL	NULL	29.95	0	0	0					
5:33 AM	64.6	62.8	94	E	6.5	NULL	NULL	29.95	0	0	0					
5:49 AM	64.7	62.8	94	E	5.5	NULL	NULL	29.95	0	0	0					
5:59 AM	64.8	62.7	93	E	6.2	NULL	NULL	29.96	0	0	0					
6:03 AM	64.8	62.7	93	E	7.6	NULL	NULL	29.95	0	0	0					
6:08 AM	64.6	62.5	93	ENE	6.9	NULL	NULL	29.96	0	0	0					
6:14 AM	64.6	62.5	93	ENE	6.3	NULL	NULL	29.96	0	0	0					
6:18 AM	64.4	62.3	93	ENE	5.1	NULL	NULL	29.96	0	0	0					
6:21 AM	64.4	62.3	93	E	5.1	NULL	NULL	29.96	0	0	0					
6:26 AM	64.4	62.3	93	ENE	5.6	NULL	NULL	29.96	0	0	0					
6:34 AM	64.2	62.1	93	E	4.7	NULL	NULL	29.96	0	0	0					
6:38 AM	64.0	61.9	93	ENE	5.8	NULL	NULL	29.96	0	0	0					
6:48 AM	64.1	62.0	93	E	4.6	NULL	NULL	29.96	0	0	0					
6:54 AM	63.9	61.8	93	ENE	5.4	NULL	NULL	29.97	0	0	0					
6:56 AM	63.9	61.8	93	ENE	5.6	NULL	NULL	29.97	0	0	0					
7:14 AM	64.1	62.0	93	ENE	6.0	NULL	NULL	29.98	0	0	0					
7:19 AM	64.3	62.2	93	ENE	5.4	NULL	NULL	29.97	0	0	0					
7:23 AM	64.6	62.5	93	ENE	5.5	NULL	NULL	29.98	0	0	0					
Sunrise	6:51 AM															

Appendix D - NOAA National Weather Service Data															
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters
											1 hr (in.)	3 hr (in.)	6 hr (in.)		
4	Sunset	7:55 PM													
	7:22 PM	81.5	61.0	50	ESE	7.2	NULL	NULL	29.91	0	0	0	16-19	Yes	
	7:26 PM	81.1	61.2	51	ESE	10.7	NULL	NULL	29.91	0	0	0			
	7:30 PM	81.0	61.7	52	E	6.5	NULL	NULL	29.91	0	0	0			
	7:39 PM	80.5	61.0	52	ESE	7.1	NULL	NULL	29.91	0	0	0			
	7:42 PM	80.1	61.4	53	ESE	7.6	NULL	NULL	29.91	0	0	0			
	7:58 PM	78.6	61.6	56	ESE	6.7	NULL	NULL	29.92	0	0	0			
	8:05 PM	77.9	61.4	57	E	6.3	NULL	NULL	29.93	0	0	0			
	8:28 PM	76.5	62.0	61	E	5.8	NULL	NULL	29.92	0	0	0			
	8:42 PM	75.6	62.1	63	E	8.1	NULL	NULL	29.92	0	0	0			
	8:47 PM	75.5	62.0	63	E	8.7	NULL	NULL	29.93	0	0	0			
	8:50 PM	75.4	61.9	63	ESE	9.6	NULL	NULL	29.93	0	0	0			
	8:58 PM	74.8	62.2	65	E	7.9	NULL	NULL	29.93	0	0	0			
	9:03 PM	74.5	61.9	65	ENE	6.9	NULL	NULL	29.93	0	0	0			
	9:08 PM	74.1	62.0	66	E	6.3	NULL	NULL	29.94	0	0	0			
	9:22 PM	73.5	62.1	68	ESE	8.4	NULL	NULL	29.94	0	0	0			
	9:34 PM	72.9	62.1	69	E	8.1	NULL	NULL	29.94	0	0	0			
	9:38 PM	72.5	62.1	70	E	11.2	NULL	NULL	29.94	0	0	0			
	9:41 PM	72.5	62.1	70	ESE	7.2	NULL	NULL	29.94	0	0	0			
	9:49 PM	72.1	62.2	71	E	7.6	NULL	NULL	29.95	0	0	0			
	9:52 PM	72.1	62.1	71	E	7.4	NULL	NULL	29.95	0	0	0			
	9:59 PM	71.7	62.2	72	E	7.0	NULL	NULL	29.95	0	0	0			
	10:03 PM	71.4	62.3	73	E	7.8	NULL	NULL	29.95	0	0	0			
	10:08 PM	71.2	62.0	73	E	8.4	NULL	NULL	29.96	0	0	0			
	10:13 PM	70.9	62.2	74	ESE	7.6	NULL	NULL	29.95	0	0	0			
	10:18 PM	70.7	62.0	74	E	7.4	NULL	NULL	29.95	0	0	0			
	10:24 PM	70.5	62.2	75	ESE	8.7	NULL	NULL	29.96	0	0	0			
	10:33 PM	70.2	62.3	76	E	7.2	NULL	NULL	29.96	0	0	0			
	10:35 PM	70.2	62.3	76	E	7.6	NULL	NULL	29.95	0	0	0			
	10:42 PM	69.9	62.2	77	E	6.6	NULL	NULL	29.96	0	0	0			
	10:48 PM	69.6	62.2	78	E	6.6	NULL	NULL	29.96	0	0	0			
	10:51 PM	69.4	62.2	78	E	8.7	NULL	NULL	29.96	0	0	0			
	10:59 PM	69.2	62.4	79	E	6.9	NULL	NULL	29.96	0	0	0			
	11:03 PM	68.9	62.3	80	E	8.3	NULL	NULL	29.95	0	0	0			
	11:09 PM	68.7	62.3	80	E	8.7	NULL	NULL	29.95	0	0	0			
	11:13 PM	68.7	62.3	80	E	6.5	NULL	NULL	29.96	0	0	0			
	11:24 PM	68.4	62.3	81	ESE	6.7	NULL	NULL	29.95	0	0	0			
	11:29 PM	68.0	62.3	82	ESE	5.8	NULL	NULL	29.95	0	0	0			
	11:34 PM	67.8	62.4	83	E	5.8	NULL	NULL	29.95	0	0	0			
	11:37 PM	67.8	62.4	83	E	5.8	NULL	NULL	29.96	0	0	0			
	11:49 PM	67.8	62.4	83	E	5.8	NULL	NULL	29.95	0	0	0			
	11:53 PM	67.8	62.4	83	E	5.8	NULL	NULL	29.96	0	0	0			
	11:58 PM	67.8	62.4	83	E	5.8	NULL	NULL	29.95	0	0	0			
	2:01 AM	67.8	62.4	83	E	5.8	NULL	NULL	29.95	0	0	0			
	12:08 AM	67.8	62.4	83	E	5.8	NULL	NULL	29.96	0	0	0			
	12:12 AM	67.8	62.4	83	E	5.8	NULL	NULL	29.96	0	0	0			
	12:19 AM	67.8	62.4	83	E	5.8	NULL	NULL	29.96	0	0	0			
	12:22 AM	67.8	62.4	83	E	5.8	NULL	NULL	29.96	0	0	0			
	12:26 AM	67.8	62.4	83	E	5.8	NULL	NULL	29.95	0	0	0			
	12:38 AM	--	--	--	N	--	NULL	NULL	29.95	0	0	0			
	12:42 AM	--	--	--	N	--	NULL	NULL	29.95	0	0	0			
	12:49 AM	--	--	--	N	--	NULL	NULL	29.96	0	0	0			
	12:53 AM	--	--	--	N	--	NULL	NULL	29.95	0	0	0			
	1:04 AM	66.0	62.7	89	NE	3.1	NULL	NULL	29.96	0	0	0			
	1:10 AM	66.0	62.7	89	NE	3.1	NULL	NULL	29.95	0	0	0			
	1:17 AM	65.7	62.4	89	ENE	4.5	NULL	NULL	29.95	0	0	0			
	1:24 AM	65.6	62.4	90	ENE	4.3	NULL	NULL	29.95	0	0	0			
	1:27 AM	65.5	62.5	90	ENE	4.0	NULL	NULL	29.95	0	0	0			
	1:31 AM	65.5	62.5	90	ENE	4.0	NULL	NULL	29.94	0	0	0			
	1:37 AM	65.5	62.5	90	ENE	4.0	NULL	NULL	29.94	0	0	0			
	1:43 AM	65.5	62.5	90	ENE	4.0	NULL	NULL	29.94	0	0	0			
	1:46 AM	65.5	62.5	90	ENE	4.0	NULL	NULL	29.94	0	0	0			
	1:50 AM	65.5	62.5	90	ENE	4.0	NULL	NULL	29.94	0	0	0			
	1:57 AM	65.5	62.8	91	NE	2.7	NULL	NULL	29.94	0	0	0			
	2:02 AM	65.5	62.8	91	NE	2.7	NULL	NULL	29.93	0	0	0			
	2:11 AM	64.8	62.1	91	ENE	3.6	NULL	NULL	29.93	0	0	0			
	2:21 AM	64.2	61.8	92	ENE	3.8	NULL	NULL	29.93	0	0	0			
	2:25 AM	64.2	61.8	92	ENE	3.1	NULL	NULL	29.93	0	0	0			
	2:37 AM	64.2	61.8	92	ENE	3.4	NULL	NULL	29.92	0	0	0			
	2:48 AM	64.2	62.0	93	E	3.8	NULL	NULL	29.92	0	0	0			
	2:51 AM	64.0	61.9	93	ESE	4.5	NULL	NULL	29.91	0	0	0			
	3:04 AM	63.5	61.7	94	ESE	3.5	NULL	NULL	29.91	0	0	0			
	3:08 AM	63.5	61.7	94	E	3.4	NULL	NULL	29.91	0	0	0			
	3:13 AM	63.5	61.7	94	E	2.9	NULL	NULL	29.91	0	0	0			
	3:18 AM	63.5	61.7	94	E	2.9	NULL	NULL	29.91	0	0	0			
	3:22 AM	63.5	61.7	94	E	2.9	NULL	NULL	29.91	0	0	0			
	3:25 AM	63.7	61.9	94	E	3.1	NULL	NULL	29.91	0	0	0			
	3:34 AM	63.7	61.9	94	E	3.1	NULL	NULL	29.91	0	0	0			
	3:38 AM	63.7	61.9	94	E	3.1	NULL	NULL	29.91	0	0	0			
	3:54 AM	63.3	61.8	95	ENE	3.8	NULL	NULL	29.91	0	0	0			
	3:59 AM	63.4	61.9	95	NE	4.0	NULL	NULL	29.91	0	0	0			
	4:02 AM	63.7	62.2	95	NE	3.1	NULL	NULL	29.91	0	0	0			
	4:09 AM	64.0	62.5	95	NE	2.9	NULL	NULL	29.91	0	0	0			
	4:17 AM	64.0	62.5	95	ENE	4.3	NULL	NULL	29.91	0	0	0			
	4:29 AM	62.6	61.1	95	W	0.6	NULL	NULL	29.91	0	0	0			
	4:31 AM	62.6	61.1	95	NNW	0.0	NULL	NULL	29.92	0	0	0			
	4:43 AM	63.3	62.1	96	NE	2.9	NULL	NULL	29.91	0	0	0			
	4:54 AM	63.4	62.2	96	NE	2.4	NULL	NULL	29.91	0	0	0			
	4:58 AM	63.3	62.1	96	NE	2.7	NULL	NULL	29.91	0	0	0			
	5:02 AM	63.0	61.8	96	ENE	2.0	NULL	NULL	29.91	0	0	0			
	5:05 AM	62.8	61.6	96	NE	2.9	NULL	NULL	29.91	0	0	0			
	5:10 AM	63.3	62.1	96	ENE	2.9	NULL	NULL	29.91	0	0	0			
	5:29 AM	63.5	62.3	96	ENE	5.1	NULL	NULL	29.92	0	0	0			
	5:33 AM	63.5	62.3	96	ENE	4.5	NULL	NULL	29.91	0	0	0			
	5:36 AM	63.3	62.1	96	NE	4.9	NULL	NULL	29.91	0	0	0			
	5:49 AM	63.7	62.5	96	ENE	4.3	NULL	NULL	29.91	0	0	0			
	5:56 AM	63.7	62.5	96	ENE	4.5	NULL	NULL	29.91	0	0	0			
	6:08 AM	63.5	62.3	96	ENE	5.4	NULL	NULL	29.91	0	0	0			
	6:14 AM	63.6	62.4	96	ENE	3.2	NULL	NULL	29.92	0	0	0			
	6:23 AM	63.9	62.7	96	ENE	5.4	NULL	NULL	29.92	0	0	0			
6:28 AM	63.8	62.6	96	ENE	5.3	NULL	NULL	29.93	0	0	0				
6:34 AM	63.5	62.3	96	ENE	4.7	NULL	NULL	29.93	0	0	0				
6:39 AM	63.3	62.1	96	ENE	5.4	NULL	NULL	29.93	0	0	0				
6:40 AM	63.5	62.3	96	ENE	5.1	NULL	NULL	29.93	0	0	0				
6:48 AM	63.5	62.3	96	ENE	5.4	NULL	NULL	29.93	0	0	0				
6:51 AM	63.4	62.2	96	ENE	5.1	NULL	NULL	29.94	0	0	0				
6:58 AM	63.1	61.9	96	ENE	3.6	NULL	NULL	29.94	0	0	0				
7:09 AM	63.0	62.1	97	ENE	4.7	NULL	NULL	29.94	0	0	0				
7:22 AM	63.9	63.0	97	ENE	4.1	NULL	NULL	29.95	0	0	0				
Sunrise	6:50 AM														

Appendix D - NOAA National Weather Service Data															
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters
											1 hr (in.)	3 hr (in.)	6 hr (in.)		
5	Sunset	7:56 PM													
	7:25 PM	82.9	62.3	50	ESE	2.5	NULL	NULL	29.87	0	0	0	16-19	Yes	
	7:39 PM	81.7	62.6	53	SSE	1.5	NULL	NULL	29.87	0	0	0			
	7:49 PM	80.3	62.4	55	ESE	0.8	NULL	NULL	29.88	0	0	0			
	8:00 PM	79.3	62.2	56	SE	2.2	NULL	NULL	29.88	0	0	0			
	8:08 PM	78.4	62.4	58	ESE	0.0	NULL	NULL	29.88	0	0	0			
	8:13 PM	78.2	62.5	59	ESE	1.9	NULL	NULL	29.88	0	0	0			
	8:18 PM	78.1	62.6	59	ESE	2.6	NULL	NULL	29.89	0	0	0			
	8:23 PM	78.2	62.7	59	ESE	3.8	NULL	NULL	29.89	0	0	0			
	8:33 PM	77.1	63.1	62	ESE	4.9	NULL	NULL	29.89	0	0	0			
	8:44 PM	76.6	63.5	64	ESE	4.8	NULL	NULL	29.90	0	0	0			
	8:50 PM	75.9	63.7	66	ESE	5.8	NULL	NULL	29.91	0	0	0			
	9:02 PM	75.9	64.6	68	ESE	9.2	NULL	NULL	29.91	0	0	0			
	9:09 PM	75.7	64.4	68	E	7.3	NULL	NULL	29.91	0	0	0			
	9:19 PM	75.5	64.6	69	ESE	7.3	NULL	NULL	29.92	0	0	0			
	9:22 PM	75.3	64.4	69	E	6.9	NULL	NULL	29.92	0	0	0			
	9:29 PM	75.0	64.5	70	E	5.8	NULL	NULL	29.92	0	0	0			
	9:33 PM	74.7	64.4	71	E	7.2	NULL	NULL	29.92	0	0	0			
	9:36 PM	74.5	64.5	71	E	7.2	NULL	NULL	29.92	0	0	0			
	9:44 PM	73.9	64.3	72	ESE	6.7	NULL	NULL	29.93	0	0	0			
	9:47 PM	73.9	64.3	72	ESE	8.1	NULL	NULL	29.93	0	0	0			
	10:04 PM	73.0	63.8	73	ESE	8.1	NULL	NULL	29.93	0	0	0			
	10:11 PM	72.8	63.6	73	E	6.7	NULL	NULL	29.94	0	0	0			
	10:23 PM	72.4	63.2	73	E	5.8	NULL	NULL	29.94	0	0	0			
	10:33 PM	72.0	63.2	74	ESE	7.6	NULL	NULL	29.94	0	0	0			
	10:37 PM	71.8	63.1	74	ESE	7.4	NULL	NULL	29.94	0	0	0			
	10:43 PM	71.5	63.0	75	ESE	6.4	NULL	NULL	29.94	0	0	0			
	10:55 PM	70.9	62.9	76	ESE	7.4	NULL	NULL	29.95	0	0	0			
	11:03 PM	70.7	62.8	76	E	4.0	NULL	NULL	29.95	0	0	0			
	11:14 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:19 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.95	0	0	0			
	11:29 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:30 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:38 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:41 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:46 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	11:55 PM	70.2	62.6	77	ESE	3.4	NULL	NULL	29.96	0	0	0			
	12:04 AM	71.2	65.0	80	--	3.0	NULL	NULL	30.04	0	0	0			
	12:10 AM	70.9	65.0	81	--	4.0	NULL	NULL	30.04	0	0	0			
	12:16 AM	70.8	65.0	81	--	4.0	NULL	NULL	30.04	0	0	0			
	12:22 AM	70.6	65.0	82	--	2.0	NULL	NULL	30.04	0	0	0			
	12:28 AM	70.4	65.0	82	--	2.0	NULL	NULL	30.04	0	0	0			
	12:40 AM	70.3	65.0	83	--	5.0	NULL	NULL	30.04	0	0	0			
	12:46 AM	70.1	65.0	83	--	4.0	NULL	NULL	30.04	0	0	0			
	12:52 AM	70.0	65.0	84	--	5.0	NULL	NULL	30.03	0	0	0			
	12:58 AM	69.9	65.0	84	--	3.0	NULL	NULL	30.03	0	0	0			
	1:04 AM	69.7	65.0	84	--	4.0	NULL	NULL	30.03	0	0	0			
	1:10 AM	69.7	65.0	85	--	3.0	NULL	NULL	30.03	0	0	0			
	1:16 AM	69.8	65.0	85	--	5.0	NULL	NULL	30.03	0	0	0			
	1:22 AM	69.7	65.0	85	--	2.0	NULL	NULL	30.03	0	0	0			
	1:28 AM	69.6	65.0	85	--	2.0	NULL	NULL	30.03	0	0	0			
	1:34 AM	69.6	65.0	86	--	2.0	NULL	NULL	30.03	0	0	0			
	1:40 AM	69.5	65.0	86	--	3.0	NULL	NULL	30.03	0	0	0			
	1:46 AM	69.4	65.0	86	--	3.0	NULL	NULL	30.02	0	0	0			
	1:52 AM	69.3	65.0	86	--	2.0	NULL	NULL	30.02	0	0	0			
	1:58 AM	69.3	65.0	87	--	2.0	NULL	NULL	30.02	0	0	0			
	2:04 AM	69.2	65.0	87	--	2.0	NULL	NULL	30.02	0	0	0			
	2:10 AM	69.0	65.0	87	--	2.0	NULL	NULL	30.02	0	0	0			
	2:16 AM	69.0	65.0	87	--	3.0	NULL	NULL	30.02	0	0	0			
	2:22 AM	69.1	66.0	88	--	3.0	NULL	NULL	30.02	0	0	0			
	2:28 AM	69.2	65.0	87	--	2.0	NULL	NULL	30.02	0	0	0			
	2:34 AM	69.2	66.0	88	--	3.0	NULL	NULL	30.02	0	0	0			
	2:40 AM	69.3	66.0	88	--	3.0	NULL	NULL	30.01	0	0	0			
	2:46 AM	69.3	66.0	88	--	3.0	NULL	NULL	30.01	0	0	0			
	2:52 AM	69.3	66.0	88	--	3.0	NULL	NULL	30.01	0	0	0			
	2:58 AM	69.4	66.0	88	--	4.0	NULL	NULL	30.01	0	0	0			
	3:04 AM	69.5	66.0	88	--	4.0	NULL	NULL	30.01	0	0	0			
	3:16 AM	69.7	66.0	88	--	4.0	NULL	NULL	30.01	0	0	0			
	3:22 AM	69.7	66.0	88	--	3.0	NULL	NULL	30.01	0	0	0			
	3:28 AM	69.6	66.0	88	--	4.0	NULL	NULL	30.01	0	0	0			
	3:34 AM	69.7	66.0	89	--	4.0	NULL	NULL	30.01	0	0	0			
	3:40 AM	69.5	66.0	89	--	4.0	NULL	NULL	30.01	0	0	0			
	3:46 AM	69.4	66.0	89	--	3.0	NULL	NULL	30.01	0	0	0			
	3:52 AM	69.3	66.0	89	--	3.0	NULL	NULL	30.01	0	0	0			
	3:58 AM	69.1	66.0	89	--	3.0	NULL	NULL	30.00	0	0	0			
	4:04 AM	69.0	66.0	89	--	2.0	NULL	NULL	30.01	0	0	0			
	4:10 AM	69.0	66.0	89	--	3.0	NULL	NULL	30.01	0	0	0			
	4:16 AM	69.0	66.0	90	--	2.0	NULL	NULL	30.01	0	0	0			
	4:22 AM	68.9	66.0	90	--	2.0	NULL	NULL	30.01	0	0	0			
	4:28 AM	68.8	66.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	4:34 AM	68.8	66.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	4:40 AM	68.8	66.0	90	--	1.0	NULL	NULL	30.01	0	0	0			
	4:46 AM	68.8	66.0	90	--	2.0	NULL	NULL	30.01	0	0	0			
	4:52 AM	68.7	66.0	90	--	4.0	NULL	NULL	30.01	0	0	0			
	4:58 AM	68.7	66.0	90	--	2.0	NULL	NULL	30.01	0	0	0			
	5:04 AM	68.6	66.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	5:10 AM	68.6	66.0	90	--	2.0	NULL	NULL	30.00	0	0	0			
	5:16 AM	68.6	66.0	90	--	2.0	NULL	NULL	30.01	0	0	0			
	5:22 AM	68.6	66.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	5:28 AM	68.6	66.0	90	--	2.0	NULL	NULL	30.01	0	0	0			
	5:34 AM	68.6	66.0	90	--	3.0	NULL	NULL	29.01	0	0	0			
	5:40 AM	68.5	66.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	5:46 AM	68.4	65.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	5:52 AM	68.3	65.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	5:58 AM	68.2	65.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	6:04 AM	68.1	65.0	90	--	4.0	NULL	NULL	30.01	0	0	0			
	6:10 AM	68.1	65.0	90	--	3.0	NULL	NULL	30.01	0	0	0			
	6:16 AM	68.0	65.0	91	--	3.0	NULL	NULL	30.01	0	0	0			
	6:22 AM	68.0	65.0	91	--	4.0	NULL	NULL	30.01	0	0	0			
	6:28 AM	68.0	65.0	91	--	3.0	NULL	NULL	30.01	0	0	0			
6:34 AM	67.9	65.0	91	--	4.0	NULL	NULL	30.02	0	0	0				
6:40 AM	68.0	65.0	91	--	4.0	NULL	NULL	30.02	0	0	0				
6:46 AM	68.0	65.0	91	--	3.0	NULL	NULL	30.02	0	0	0				
6:52 AM	68.0	65.0	91	--	4.0	NULL	NULL	30.02	0	0	0				
6:58 AM	68.0	65.0	91	--	5.0	NULL	NULL	30.02	0	0	0				
7:04 AM	68.1	65.0	91	--	5.0	NULL	NULL	30.03	0	0	0				
7:10 AM	68.1	65.0	91	--	3.0	NULL	NULL	30.03	0	0	0				
7:16 AM	68.2	66.0	91	--	2.0	NULL	NULL	30.03	0	0	0				
7:22 AM	68.4	66.0	91	--	2.0	NULL	NULL	30.03	0	0	0				
Sunrise	6:49 AM														

Appendix D - NOAA National Weather Service Data																
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters	
											1 hr (in.)	3 hr (in.)	6 hr (in.)			
6	Sunset	7:56 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey
	4/27/2025-4/28/2025	7:35 PM	84.0	60.3	45	E	15.0	10	NULL	30.07	0	0	0			
		7:55 PM	81.9	61.3	50	E	14.0	10	NULL	30.07	0	0	0			
		8:15 PM	79.9	62.2	55	E	15.0	10	NULL	30.09	0	0	0			
		8:35 PM	78.3	63.3	60	E	13.0	10	NULL	30.10	0	0	0			
		8:55 PM	77.0	63.9	64	E	10.0	10	NULL	30.10	0	0	0			
		9:15 PM	76.1	64.4	67	E	13.0	10	NULL	30.11	0	0	0			
		9:35 PM	75.2	64.9	71	E	10.0	10	NULL	30.12	0	0	0			
		9:55 PM	74.3	65.3	74	E	9.0	10	NULL	30.12	0	0	0			
		10:15 PM	73.9	65.8	76	E	9.0	10	NULL	30.13	0	0	0			
		10:35 PM	73.2	65.8	78	SE	9.0	10	NULL	30.13	0	0	0			
		10:55 PM	73.2	65.8	78	--	--	10	NULL	30.13	0	0	0			
		11:15 PM	72.7	65.8	79	SE	8.0	10	NULL	30.14	0	0	0			
		11:35 PM	72.0	66.0	82	SE	7.0	0	NULL	30.14	0	0	0			
		11:55 PM	72.1	66.2	82	--	--	10	NULL	30.15	0	0	0			
		12:15 AM	70.9	65.8	84	SE	6.0	10	NULL	30.15	0	0	0			
		12:35 AM	70.2	65.7	86	SE	6.0	10	NULL	30.15	0	0	0			
		12:55 AM	70.2	66.2	87	SE	5.0	10	NULL	30.15	0	0	0			
		1:15 AM	70.3	66.7	88	S	5.0	10	NULL	30.15	0	0	0			
		1:35 AM	70.7	67.1	88	--	--	10	NULL	30.15	0	0	0			
		1:55 AM	68.0	65.1	91	--	--	10	NULL	30.15	0	0	0			
		2:15 AM	68.4	65.7	91	S	3.0	10	NULL	30.14	0	0	0			
		2:35 AM	67.3	64.9	92	--	--	10	NULL	30.13	0	0	0			
		2:55 AM	64.6	63.7	97	--	--	10	NULL	30.12	0	0	0			
		3:15 AM	65.7	64.0	95	--	--	10	NULL	30.12	0	0	0			
		3:35 AM	66.0	64.4	95	NW	3.0	10	NULL	30.12	0	0	0			
		3:55 AM	64.4	62.6	94	--	--	10	NULL	30.12	0	0	0			
		4:15 AM	63.9	62.8	96	--	--	10	NULL	30.11	0	0	0			
		4:35 AM	61.9	61.2	98	--	--	10	NULL	30.11	0	0	0			
		4:55 AM	63.0	61.9	96	--	--	10	NULL	30.11	0	0	0			
		5:15 AM	60.6	59.9	97	N	5.0	1.75	Fog/Mist	30.12	0	0	0			
		5:35 AM	60.6	60.3	99	--	--	4	Fog/Mist	30.12	0	0	0			
		5:55 AM	61.0	60.6	99	--	--	3.5	Fog/Mist	30.13	0	0	0			
		6:15 AM	60.1	59.9	99	NE	3.0	0.5	Fog	30.14	0	0	0			
		6:35 AM	59.0	59.0	100	NE	3.0	0.25	Fog	30.14	0	0	0			
		6:55 AM	60.8	60.8	100	--	--	0.25	Fog	30.15	0	0	0			
		7:15 AM	60.8	--	--	--	--	0.25	Fog	30.16	0	0	0			
		7:35 AM	62.6	--	--	NE	5.0	10	NULL	30.16	0	0	0			
	7	Sunrise	6:48 AM													
Sunset		7:57 PM														
4/28/2025-4/29/2025		7:15 PM	83.7	65.3	54	E	14.0	10	NULL	30.14	0	0	0			
		7:35 PM	81.9	65.8	58	E	15.0	10	NULL	30.15	0	0	0			
		7:55 PM	80.6	66.0	61	--	--	10	NULL	30.16	0	0	0			
		8:15 PM	79.0	66.6	66	E	12.0	10	NULL	30.16	0	0	0			
		8:35 PM	77.9	66.9	69	E	10.0	10	NULL	30.17	0	0	0			
		8:55 PM	77.0	67.3	72	--	--	10	NULL	30.17	0	0	0			
		9:15 PM	76.3	67.3	74	--	--	10	NULL	30.17	0	0	0			
		9:35 PM	74.7	67.1	77	E	7.0	10	NULL	30.18	0	0	0			
		9:55 PM	73.2	66.9	81	E	6.0	10	NULL	30.19	0	0	0			
		10:15 PM	73.6	67.3	81	--	--	10	NULL	30.19	0	0	0			
		10:35 PM	72.5	66.9	83	E	5.0	10	NULL	30.19	0	0	0			
		10:55 PM	72.0	66.6	83	E	6.0	10	NULL	30.19	0	0	0			
		11:15 PM	70.9	66.4	86	E	5.0	10	NULL	30.19	0	0	0			
		11:35 PM	69.3	65.7	88	NE	6.0	10	NULL	30.20	0	0	0			
		11:55 PM	68.7	65.5	89	E	3.0	10	NULL	30.19	0	0	0			
		12:15 AM	68.2	65.5	91	--	--	10	NULL	30.19	0	0	0			
		12:35 AM	67.8	65.5	92	NE	6.0	10	NULL	30.19	0	0	0			
		12:55 AM	67.5	65.5	93	NE	7.0	10	NULL	30.19	0	0	0			
		1:15 AM	67.6	65.5	93	NE	6.0	10	NULL	30.18	0	0	0			
		1:35 AM	67.6	65.7	93	NE	5.0	10	NULL	30.18	0	0	0			
		1:55 AM	66.2	66.2	100	NE	5.0	0	NULL	30.18	0	0	0			
		2:15 AM	67.3	65.7	95	NE	6.0	10	NULL	30.17	0	0	0			
		2:35 AM	67.3	66.0	96	NE	6.0	10	NULL	30.16	0	0	0			
		2:55 AM	67.3	66.2	96	--	--	10	NULL	30.16	0	0	0			
		3:15 AM	66.7	65.5	96	N	3.0	10	NULL	30.15	0	0	0			
		3:35 AM	66.6	65.7	97	N	5.0	10	NULL	30.15	0	0	0			
		3:55 AM	66.2	65.5	98	NW	3.0	10	NULL	30.16	0	0	0			
		4:15 AM	66.4	65.8	98	N	3.0	10	NULL	30.16	0	0	0			
		4:35 AM	66.4	65.8	98	N	3.0	7	NULL	30.16	0	0	0			
		4:55 AM	66.7	66.4	99	--	--	7	NULL	30.16	0	0	0			
		5:15 AM	66.9	66.4	98	--	--	10	NULL	30.16	0	0	0			
		5:35 AM	66.4	65.8	98	N	3.0	10	NULL	30.16	0	0	0			
		5:55 AM	66.6	66.2	99	N	5.0	10	NULL	30.17	0	0	0			
		6:15 AM	66.2	65.8	99	--	--	7	NULL	--	0	0	0			
		6:35 AM	66.0	65.7	99	--	--	7	Fog/Mist	30.17	0	0	0			
		6:55 AM	66.6	66.2	99	--	--	7	Fog/Mist	30.17	0	0	0			
		7:15 AM	66.4	66.0	99	NE	3.0	7	NULL	30.18	0	0	0			
7:35 AM	66.4	66.2	99	NE	6.0	7	Fog/Mist	30.19	0	0	0					
8	Sunrise	6:47 AM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey
	Sunset	7:57 PM														
	4/29/2025-4/30/2025	7:15 PM	78.4	61.3	56	E	14.0	10	NULL	30.15	0	0	0			
		7:35 PM	77.2	61.0	57	E	15.0	10	NULL	30.15	0	0	0			
		7:55 PM	75.6	61.0	61	E	12.0	10	NULL	30.16	0	0	0			
		8:15 PM	74.1	61.3	64	E	10.0	10	NULL	30.16	0	0	0			
		8:35 PM	72.7	61.3	68	E	7.0	10	NULL	30.17	0	0	0			
		8:55 PM	71.1	61.2	71	E	6.0	10	NULL	30.17	0	0	0			
		9:15 PM	70.2	61.0	73	--	--	10	NULL	30.17	0	0	0			
		9:35 PM	69.4	60.8	74	E	7.0	10	NULL	30.17	0	0	0			
		9:55 PM	68.7	60.4	75	E	6.0	10	NULL	30.17	0	0	0			
		10:15 PM	68.0	60.3	76	E	3.0	10	NULL	30.18	0	0	0			
		10:35 PM	68.0	60.3	76	E	6.0	10	NULL	30.18	0	0	0			
		10:55 PM	67.5	60.6	79	NE	5.0	10	NULL	30.18	0	0	0			
		11:15 PM	66.6	60.6	81	--	--	10	NULL	30.19	0	0	0			
		11:35 PM	65.8	60.4	83	NE	5.0	10	NULL	30.18	0	0	0			
		11:55 PM	64.4	60.3	87	NE	6.0	10	NULL	30.18	0	0	0			
		12:15 AM	64.9	60.3	85	NE	5.0	10	NULL	30.18	0	0	0			
		12:35 AM	65.1	60.3	84	--	--	10	NULL	--	0	0	0			
		12:55 AM	64.4	60.8	88	--	--	0	NULL	--	0	0	0			
		1:15 AM	63.7	59.7	87	NE	6.0	10	NULL	30.17	0	0	0			
		1:35 AM	63.5	59.9	88	NE	6.0	10	NULL	30.16	0	0	0			
		1:55 AM	62.2	59.4	90	NE	7.0	10	NULL	30.16	0	0	0			
		2:15 AM	62.2	59.4	90	NE	7.0	10	NULL	30.15	0	0	0			
		2:35 AM	61.7	59.0	91	NE	7.0	10	NULL	30.15	0	0	0			
		2:55 AM	62.2	59.4	90	NE	5.0	10	NULL	30.14	0	0	0			
		3:15 AM	61.3	59.0	92	NE	3.0	10	NULL	30.14	0	0	0			
		3:35 AM	62.1	59.4	91	--	--	10	NULL	30.14	0	0	0			
		3:55 AM	61.7	59.2	92	NE	3.0	10	NULL	30.14	0	0	0			
		4:15 AM	61.0	59.2	94	NE	3.0	10	NULL	30.14	0	0	0			
		4:35 AM	60.8	59.2	94	NE	5.0	10	NULL	30.13	0	0	0			
		4:55 AM	59.9	58.8	96	NE	3.0	10	NULL	30.13	0	0	0			
		5:15 AM	59.5	58.5	96	--	--	10	NULL	30.13	0	0	0			
		5:35 AM	60.3	59.0	96	N	3.0	10	NULL	30.13	0	0	0			
		5:55 AM	58.5	57.4	96	N	5.0	10	NULL	30.13	0	0	0			
		6:15 AM	58.1	57.4	97	N	3.0	10	NULL	30.13	0	0	0			
		6:35 AM	58.5	57.7	97	N	3.0	10	NULL	30.14	0	0	0			
		6:55 AM	58.6	57.9	97	--	--	10	NULL	30.14	0	0	0			
		7:15 AM	59.0	58.1	97	N	3.0	10	NULL	30.14	0	0	0			
	Sunrise	6:47 AM														

Appendix D - NOAA National Weather Service Data																			
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters				
											1 hr (in.)	3 hr (in.)	6 hr (in.)						
9	Sunset	7:58 PM													16-19	Yes			
	4/30/2025-5/1/2025	7:15 PM	79.5	58.5	49	E	13.0	10	NULL	30.08	0	0	0						
		7:35 PM	78.3	58.3	50	E	15.0	10	NULL	30.08	0	0	0						
		7:55 PM	76.6	58.8	54	E	9.0	10	NULL	30.08	0	0	0						
		8:15 PM	75.4	59.0	57	E	9.0	10	NULL	30.09	0	0	0						
		8:35 PM	73.4	58.8	60	E	7.0	10	NULL	30.09	0	0	0						
		8:55 PM	71.6	58.8	64	E	7.0	10	NULL	30.10	0	0	0						
		9:15 PM	70.7	59.4	67	E	8.0	10	NULL	30.10	0	0	0						
		9:35 PM	69.6	59.7	71	E	8.0	10	NULL	30.10	0	0	0						
		9:55 PM	68.9	60.3	74	E	8.0	10	NULL	30.11	0	0	0						
		10:15 PM	68.5	60.8	76	E	7.0	10	NULL	30.11	0	0	0						
		10:35 PM	68.0	60.8	78	E	6.0	10	NULL	30.11	0	0	0						
		10:55 PM	66.7	60.6	81	--	--	10	NULL	30.11	0	0	0						
		11:15 PM	65.8	60.4	83	E	7.0	10	NULL	30.11	0	0	0						
		11:35 PM	65.3	60.3	84	E	7.0	10	NULL	30.11	0	0	0						
		11:55 PM	64.8	60.3	85	--	--	10	NULL	30.11	0	0	0						
		12:15 AM	64.2	60.1	87	E	7.0	10	NULL	30.12	0	0	0						
		12:35 AM	64.2	59.9	86	E	6.0	10	NULL	30.11	0	0	0						
		12:55 AM	64.2	59.9	86	E	6.0	10	NULL	30.11	0	0	0						
		1:15 AM	64.9	60.1	84	E	7.0	10	NULL	30.11	0	0	0						
		1:35 AM	63.9	59.7	86	--	--	10	NULL	--	0	0	0						
		1:55 AM	63.9	59.5	86	E	6.0	10	NULL	30.09	0	0	0						
		2:15 AM	63.9	59.5	86	E	7.0	10	NULL	30.09	0	0	0						
		2:35 AM	63.0	59.2	88	NE	3.0	10	NULL	30.09	0	0	0						
		2:55 AM	61.5	59.0	92	--	--	10	NULL	30.08	0	0	0						
		3:15 AM	62.2	59.2	90	E	5.0	10	NULL	30.08	0	0	0						
		3:35 AM	61.5	58.8	91	--	--	10	NULL	30.08	0	0	0						
		3:55 AM	61.9	59.4	92	--	--	10	NULL	30.08	0	0	0						
		4:15 AM	61.7	59.5	93	--	--	10	NULL	30.08	0	0	0						
		4:35 AM	60.4	58.5	93	N	5.0	10	NULL	30.08	0	0	0						
		4:55 AM	60.1	58.6	95	N	3.0	10	NULL	30.08	0	0	0						
		5:15 AM	60.6	59.4	96	--	--	10	NULL	30.08	0	0	0						
		5:35 AM	60.6	59.2	95	NW	3.0	10	NULL	30.09	0	0	0						
		5:55 AM	60.3	58.8	95	NE	5.0	10	NULL	30.09	0	0	0						
		6:15 AM	59.2	58.5	97	N	3.0	10	NULL	30.09	0	0	0						
		6:35 AM	60.8	59.9	97	--	--	10	NULL	30.10	0	0	0						
		6:55 AM	60.8	59.9	97	--	--	10	NULL	30.11	0	0	0						
		7:15 AM	60.6	59.7	97	--	--	10	NULL	30.12	0	0	0						
		7:35 AM	62.1	61.2	97	NW	5.0	10	NULL	30.13	0	0	0						
	Sunrise	6:46 AM																	
10	Sunset	7:59 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey			
	5/1/2025-5/2/2025	7:15 PM	81.5	61.3	50	E	14.0	10	NULL	30.02	0	0	0						
		7:35 PM	80.6	61.2	52	E	13.0	10	NULL	30.03	0	0	0						
		7:55 PM	79.3	61.0	54	E	14.0	10	NULL	30.04	0	0	0						
		8:15 PM	78.1	61.0	56	E	9.0	10	NULL	30.04	0	0	0						
		8:35 PM	77.0	61.2	58	E	10.0	10	NULL	30.06	0	0	0						
		8:55 PM	77.0	60.8	57	E	12.0	10	NULL	30.06	0	0	0						
		9:15 PM	75.0	61.2	62	E	10.0	10	NULL	30.07	0	0	0						
		9:35 PM	74.3	61.5	65	E	9.0	10	NULL	30.07	0	0	0						
		10:15 PM	72.9	61.5	68	E	10.0	10	NULL	30.08	0	0	0						
		10:35 PM	72.1	61.5	69	E	9.0	10	NULL	30.08	0	0	0						
		11:15 PM	70.9	61.7	73	E	8.0	10	NULL	30.07	0	0	0						
		11:35 PM	70.2	61.7	75	E	6.0	10	NULL	30.07	0	0	0						
		11:55 PM	69.3	61.7	77	E	5.0	10	NULL	30.07	0	0	0						
		12:15 AM	68.7	61.7	78	E	5.0	10	NULL	30.08	0	0	0						
		12:35 AM	68.0	61.5	80	E	5.0	10	NULL	30.08	0	0	0						
		12:55 AM	68.5	61.9	79	E	3.0	10	NULL	30.08	0	0	0						
		1:15 AM	67.3	61.5	82	E	6.0	10	NULL	30.08	0	0	0						
		1:35 AM	66.6	61.5	84	E	3.0	10	NULL	30.07	0	0	0						
		1:55 AM	66.9	62.1	84	SE	3.0	10	NULL	30.07	0	0	0						
		2:15 AM	66.2	61.5	85	--	--	10	NULL	30.06	0	0	0						
		2:35 AM	64.2	60.8	89	--	--	10	NULL	30.06	0	0	0						
		2:55 AM	64.9	61.2	88	--	--	10	NULL	30.06	0	0	0						
		3:15 AM	64.0	61.0	90	--	--	10	NULL	30.05	0	0	0						
		3:35 AM	63.1	60.8	92	E	3.0	10	NULL	30.04	0	0	0						
		3:55 AM	63.5	60.6	90	E	3.0	10	NULL	30.05	0	0	0						
		4:15 AM	62.2	59.5	91	NE	3.0	10	NULL	30.04	0	0	0						
		4:35 AM	61.2	59.5	94	--	--	10	NULL	30.05	0	0	0						
		4:55 AM	61.0	59.5	95	NW	5.0	10	NULL	30.05	0	0	0						
		5:15 AM	60.6	59.5	96	NW	6.0	10	NULL	30.05	0	0	0						
		5:35 AM	60.8	59.0	94	--	--	10	NULL	30.05	0	0	0						
		5:55 AM	60.8	59.2	94	N	3.0	10	NULL	30.05	0	0	0						
		6:15 AM	61.0	59.5	95	--	--	10	NULL	30.05	0	0	0						
		6:35 AM	60.3	59.4	97	--	--	10	NULL	30.06	0	0	0						
		6:55 AM	59.7	58.8	97	N	5.0	10	NULL	30.07	0	0	0						
		7:15 AM	60.1	59.2	97	N	3.0	10	NULL	30.08	0	0	0						
		7:35 AM	61.7	60.8	97	--	--	10	NULL	--	0	0	0						
		Sunrise	6:45 AM																
		11	Sunset	7:59 PM													16-19	Yes	
	5/2/2025-5/3/2025		7:15 PM	80.1	65.8	62	E	16.0	10	NULL	29.99	0	0	0					
7:35 PM			78.4	64.8	63	--	--	10	NULL	29.99	0	0	0						
7:55 PM			77.0	64.4	65	--	--	10	NULL	29.99	0	0	0						
8:15 PM			76.3	64.4	67	--	--	10	NULL	29.99	0	0	0						
8:35 PM			75.4	63.7	67	E	9.0	10	NULL	29.98	0	0	0						
8:55 PM			74.5	63.1	68	E	7.0	10	NULL	29.99	0	0	0						
9:15 PM			74.3	63.9	70	E	8.0	10	NULL	30.00	0	0	0						
9:35 PM			73.4	64.8	74	SE	7.0	10	NULL	30.00	0	0	0						
9:55 PM			73.4	65.7	77	E	8.0	10	NULL	30.00	0	0	0						
10:15 PM			72.0	65.7	81	E	6.0	10	NULL	30.01	0	0	0						
10:35 PM			72.7	66.4	81	E	8.0	10	NULL	30.01	0	0	0						
10:55 PM			72.5	66.6	82	SE	7.0	10	NULL	30.01	0	0	0						
11:15 PM			72.5	66.9	83	E	5.0	10	NULL	30.02	0	0	0						
11:35 PM			68.7	64.9	88	NE	5.0	10	NULL	30.03	0	0	0						
11:55 PM			69.8	66.0	88	E	5.0	10	NULL	30.03	0	0	0						
12:15 AM			69.1	65.5	88	E	6.0	10	NULL	30.04	0	0	0						
12:35 AM			68.0	65.1	91	E	6.0	10	NULL	30.04	0	0	0						
12:55 AM			67.3	64.9	92	E	6.0	10	NULL	30.04	0	0	0						
1:15 AM			67.3	64.9	92	E	5.0	10	NULL	30.04	0	0	0						
1:35 AM			67.1	64.9	93	E	3.0	10	NULL	30.04	0	0	0						
1:55 AM			67.3	64.9	92	E	5.0	10	NULL	30.03	0	0	0						
2:15 AM			67.1	65.1	93	E	6.0	10	NULL	30.02	0	0	0						
2:35 AM			66.7	64.8	93	E	7.0	10	NULL	30.01	0	0	0						
2:55 AM			67.6	65.3	92	E	5.0	10	NULL	30.01	0	0	0						
3:15 AM			67.1	64.9	93	E	3.0	10	NULL	30.0	0	0	0						
3:35 AM			67.5	65.5	93	E	3.0	10	NULL	30.0	0	0	0						
3:55 AM			67.1	65.3	94	--	--	10	NULL	29.99	0	0	0						
4:15 AM			65.8	64.4	95	--	--	10	NULL	29.99	0	0	0						
4:35 AM			66.2	64.9	96	--	--	10	NULL	29.99	0	0	0						
4:55 AM			65.5	64.4	96	--	--	10	NULL	29.99	0	0	0						
5:15 AM			65.1	64.4	98	--	--	10	NULL	30.0	0	0	0						
5:35 AM			66.2	64.4	94	--	--	10	NULL	29.99	0	0	0						
5:55 AM			64.2	63.7	98	--	--	10	NULL	29.99	0	0	0						
6:15 AM			65.1	64.4	98	--	--	10	NULL	29.99	0	0	0						
6:35 AM			64.6	63.9	98	--	--	10	NULL	29.99	0	0	0						
6:55 AM			64.0	63.3	98	E	5.0	10	NULL	29.99	0	0	0						
7:15 AM			64.6	63.7	97	E	7.0	10	NULL	30.0	0	0	0						
7:35 AM			65.3	64.2	96	--	--	10	NULL	30.0	0	0	0						
Sunrise	6:44 AM																		

Appendix D - NOAA National Weather Service Data																				
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters					
											1 hr (in.)	3 hr (in.)	6 hr (in.)							
12	Sunset	8:00 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey				
	5/3/2025-5/4/2025	7:15 PM	84.7	66.7	55	S	14.0	10	NULL	29.90	0	0	0							
		7:35 PM	81.9	68.4	64	S	13.0	10	NULL	29.91	0	0	0							
		7:55 PM	81.3	67.8	64	S	14.0	10	NULL	29.92	0	0	0							
		8:15 PM	78.6	69.4	74	S	20.0	10	NULL	29.92	0	0	0							
		8:35 PM	77.5	69.3	76	S	10.0	10	NULL	29.92	0	0	0							
		8:55 PM	77.2	68.9	76	S	6.0	10	NULL	29.92	0	0	0							
		9:15 PM	77.0	69.8	79	--	--	0	NULL	--	0	0	0							
		9:35 PM	75.7	68.5	78	SE	7.0	10	NULL	29.93	0	0	0							
		9:55 PM	75.2	70.5	85	SE	8.0	10	NULL	29.95	0	0	0							
		10:15 PM	75.7	69.3	80	S	12.0	10	NULL	29.96	0	0	0							
		10:35 PM	75.6	69.6	82	S	9.0	10	NULL	29.96	0	0	0							
		10:55 PM	74.8	69.6	84	S	8.0	10	NULL	29.95	0	0	0							
		11:15 PM	74.8	69.8	84	S	13.0	10	NULL	29.95	0	0	0							
		11:35 PM	74.5	69.6	85	S	8.0	10	NULL	29.95	0	0	0							
		11:55 PM	74.1	69.6	86	S	8.0	10	NULL	29.95	0	0	0							
		12:15 AM	73.9	69.6	86	--	--	10	NULL	29.95	0	0	0							
		12:35 AM	73.9	69.4	86	S	6.0	10	NULL	29.94	0	0	0							
		12:55 AM	73.4	68.9	86	S	6.0	10	NULL	29.94	0	0	0							
		1:15 AM	72.7	68.5	87	S	6.0	10	NULL	29.93	0	0	0							
		1:35 AM	72.5	68.2	86	S	6.0	10	NULL	29.93	0	0	0							
		1:55 AM	72.5	68.4	87	S	6.0	10	NULL	29.93	0	0	0							
		2:15 AM	72.0	68.4	89	--	--	10	NULL	29.92	0	0	0							
		2:35 AM	71.8	68.7	90	--	--	10	NULL	29.93	0	0	0							
		2:55 AM	71.1	68.4	91	S	5.0	10	NULL	29.92	0	0	0							
		3:15 AM	71.6	68.7	91	--	--	10	NULL	29.91	0	0	0							
		3:35 AM	70.9	68.5	92	S	3.0	10	NULL	29.90	0	0	0							
		3:55 AM	71.2	68.9	92	S	3.0	10	NULL	29.90	0	0	0							
		4:15 AM	71.2	68.9	92	--	--	10	NULL	29.89	0	0	0							
		4:35 AM	71.2	68.9	92	--	--	10	NULL	29.90	0	0	0							
		4:55 AM	71.2	68.9	92	--	--	10	NULL	29.90	0	0	0							
		5:15 AM	71.6	68	88	S	6.0	10	NULL	29.90	0	0	0							
		5:35 AM	70.7	68.5	93	S	5.0	10	NULL	29.90	0	0	0							
		5:55 AM	70.9	68.9	94	S	6.0	10	NULL	29.90	0	0	0							
		6:15 AM	71.6	69.4	93	S	7.0	10	NULL	29.90	0	0	0							
		6:35 AM	71.8	69.6	93	--	--	10	NULL	29.90	0	0	0							
		6:55 AM	71.8	69.6	93	S	7.0	10	NULL	29.90	0	0	0							
		7:15 AM	71.6	69.6	94	S	6.0	10	NULL	29.91	0	0	0							
	13	Sunrise	6:44 AM														16-19	Yes		
Sunset		8:00 PM																		
5/4/2025-5/5/2025		7:15 PM	85.5	65.5	51	SW	8.0	10	NULL	29.86	0	0	0							
		7:35 PM	84.6	65.5	53	SW	9.0	10	NULL	29.86	0	0	0							
		7:55 PM	83.3	65.5	55	SW	8.0	10	NULL	29.87	0	0	0							
		8:15 PM	81.9	65.7	58	SW	7.0	10	NULL	29.88	0	0	0							
		8:35 PM	80.8	65.8	61	SW	6.0	10	NULL	29.88	0	0	0							
		8:55 PM	79.2	66.2	65	SW	8.0	10	NULL	29.89	0	0	0							
		9:15 PM	79.0	67.1	67	SW	9.0	10	NULL	29.90	0	0	0							
		9:35 PM	77.9	67.5	70	SW	8.0	10	NULL	29.91	0	0	0							
		9:55 PM	77.4	67.5	72	SW	9.0	10	NULL	29.91	0	0	0							
		10:15 PM	76.6	67.1	72	SW	10.0	10	NULL	29.92	0	0	0							
		10:35 PM	76.1	67.3	74	SW	8.0	10	NULL	29.93	0	0	0							
		10:55 PM	75.4	67.5	77	SW	7.0	10	NULL	29.93	0	0	0							
		11:15 PM	73.8	66.7	79	S	6.0	10	NULL	29.93	0	0	0							
		11:35 PM	72.7	66.7	82	S	5.0	10	NULL	29.94	0	0	0							
		11:55 PM	71.6	66.2	83	SW	6.0	10	NULL	29.94	0	0	0							
		12:15 AM	72.5	66.9	83	S	7.0	10	NULL	29.93	0	0	0							
		12:35 AM	71.4	66.9	86	SW	5.0	10	NULL	29.93	0	0	0							
		12:55 AM	70.5	66.6	87	S	5.0	10	NULL	29.94	0	0	0							
		1:15 AM	70.0	66.4	88	S	6.0	10	NULL	29.93	0	0	0							
		1:35 AM	68.9	66.2	91	SW	3.0	10	NULL	29.92	0	0	0							
		1:55 AM	70.2	67.1	90	SW	5.0	10	NULL	29.92	0	0	0							
		2:15 AM	69.6	66.9	91	SW	3.0	10	NULL	29.92	0	0	0							
		2:35 AM	69.3	66.6	91	W	3.0	10	NULL	29.92	0	0	0							
		2:55 AM	69.4	66.7	91	--	--	10	NULL	29.92	0	0	0							
		3:15 AM	69.4	66.9	92	W	3.0	10	NULL	29.92	0	0	0							
		3:35 AM	68.5	66.6	93	--	--	10	NULL	29.92	0	0	0							
		3:55 AM	68.9	67.1	94	--	--	10	NULL	29.92	0	0	0							
		4:15 AM	67.6	65.3	92	--	--	10	NULL	29.92	0	0	0							
		4:35 AM	67.3	66.2	96	--	--	10	NULL	29.92	0	0	0							
		4:55 AM	65.3	63.9	95	--	--	10	NULL	29.93	0	0	0							
		5:15 AM	65.5	64.8	98	--	--	4	Fog/Mist	29.93	0	0	0							
		5:35 AM	65.8	65.5	99	--	--	0	NULL	29.93	0	0	0							
		5:55 AM	63.9	63.3	98	SE	5.0	0.75	Fog/Mist	29.94	0	0	0							
		6:15 AM	65.5	65.3	99	SE	5.0	0	NULL	29.94	0	0	0							
		6:35 AM	65.7	65.5	99	S	6.0	7	NULL	29.94	0	0	0							
		6:55 AM	65.5	64.9	98	--	--	0	NULL	29.94	0	0	0							
		7:15 AM	66.4	65.8	98	--	--	4	Fog/Mist	29.95	0	0	0							
14	Sunrise	6:43 AM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey				
	Sunset	8:01 PM																		
	5/5/2025-5/6/2025	7:35 PM	76.5	68	75	S	17.0	10	NULL	29.95	0	0	0							
		7:55 PM	76.6	68.7	77	SE	13.0	10	NULL	29.97	0	0	0							
		8:35 PM	75.7	69.8	82	--	--	10	NULL	30.00	0	0	0							
		8:55 PM	75.4	69.8	83	E	13.0	10	NULL	30.02	0	0	0							
		9:15 PM	74.1	68.5	83	E	17.0	10	NULL	30.02	0	0	0							
		9:35 PM	73.6	67.8	82	--	--	10	NULL	30.02	0	0	0							
		9:55 PM	72.9	67.5	83	SE	15.0	10	NULL	30.03	0	0	0							
		10:15 PM	72.7	65.3	78	SE	15.0	10	NULL	30.03	0	0	0							
		10:35 PM	73.0	65.3	77	E	14.0	10	NULL	30.03	0	0	0							
		10:55 PM	73.2	65.5	77	E	12.0	10	NULL	30.03	0	0	0							
		11:15 PM	73.0	64.9	76	SE	7.0	10	NULL	30.02	0	0	0							
		11:35 PM	72.7	65.1	77	S	7.0	10	NULL	30.01	0	0	0							
		11:55 PM	72.5	65.3	78	S	7.0	10	NULL	30.01	0	0	0							
		12:15 AM	72.5	66	80	SW	6.0	10	NULL	30.00	0	0	0							
		12:35 AM	71.6	66	83	SW	8.0	10	NULL	29.99	0	0	0							
		12:55 AM	71.8	65.5	81	--	--	10	NULL	30.00	0	0	0							
		1:15 AM	71.1	65.5	83	S	5.0	10	NULL	29.99	0	0	0							
		1:35 AM	70.5	65.1	83	S	3.0	10	NULL	29.99	0	0	0							
		1:55 AM	70.9	65.5	83	SE	5.0	10	NULL	30.00	0	0	0							
		2:15 AM	71.2	66.4	85	SE	6.0	10	NULL	30.00	0	0	0							
		2:35 AM	72.0	68	87	SE	7.0	10	NULL	30.00	0	0	0							
		2:55 AM	68.7	65.7	90	E	6.0	10	NULL	30.01	0	0	0							
		3:15 AM	68.9	66.6	92	SE	3.0	10	NULL	30.00	0	0	0							
		3:35 AM	68.4	65.5	91	E	5.0	10	NULL	30.00	0	0	0							
		3:55 AM	67.5	64.9	92	E	6.0	10	NULL	30.00	0	0	0							
		4:15 AM	66.7	64.9	94	--	--	10	NULL	--	0	0	0							
		4:35 AM	66.2	64.9	96	E	8.0	10	NULL	30.01	0	0	0							
		4:55 AM	65.8	64.4	95	E	5.0	10	NULL	30.02	0	0	0							
		5:15 AM	66.9	65.5	95	E	3.0	10	NULL	30.02	0	0	0							
		5:35 AM	66.6	65.1	95	E	3.0	10	NULL	30.02	0	0	0							
		5:55 AM	68.0	66.2	94	E	3.0	10	NULL	30.03	0	0	0							
		6:15 AM	68.2	65.8	92	E	3.0	10	NULL	30.03	0	0	0							
		6:35 AM	67.5	65.3	93	--	--	10	NULL	30.03	0	0	0							
		6:55 AM	67.8	65.5	92	--	--	7	NULL	30.04	0	0	0							
		7:15 AM	67.8	65.7	93	E	5.0	0	NULL	30.04	0	0	0							
		14	Sunrise	6:42 AM													16-19			

Appendix D - NOAA National Weather Service Data																		
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters			
											1 hr (in.)	3 hr (in.)	6 hr (in.)					
15	Sunset	8:01 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey; precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period		
	5/6/2025-5/7/2025	7:15 PM	80.1	69.4	70	E	18.0	10	NULL	30.01								
		7:35 PM	75.9	70.3	83	E	10.0	10	Thunderstorm in Vicinity	30.02	0	0	0					
		7:55 PM	72.9	70.7	93	E	18.0	3	Thunderstorm Light Rain in Vicinity Fog/Mist	30.02	0.15	0	0.15					
		8:15 PM	72.5	70.2	92	S	22.0	10	Thunderstorm and Breezy	30.06	0	0	0					
		8:35 PM	70.5	67.8	91	S	22.0	10	Thunderstorm and Breezy	30.06	0	0	0					
		8:55 PM	71.1	65.7	83	--	--	0	NULL	0	0	0	0					
		9:15 PM	71.4	66	83	W	14.0	7	Thunderstorm Haze in Vicinity	30.05	0	0	0					
		9:35 PM	70.5	66	86	S	14.0	5	Rain	30.03	0.06	0	0					
		9:55 PM	70.2	66.4	88	N	6.0	10	Light Rain	30.03	0.07	0	0					
		10:15 PM	70.2	65.8	86	SW	6.0	10	Light Rain	30.02	0.01	0	0					
		10:35 PM	70.3	65.7	85	--	--	10	NULL	30.00	0.01	0	0					
		10:55 PM	70.0	66.6	89	--	--	10	NULL	30.00	0.01	0.08	0					
		11:15 PM	70.5	67.5	90	E	8.0	10	NULL	30.02	0	0	0					
		11:35 PM	70.3	67.6	91	NE	3.0	10	NULL	30.04	0	0	0					
		11:55 PM	70.7	67.1	88	N	3.0	10	NULL	30.04	0	0	0					
		12:15 AM	70.2	67.6	92	N	5.0	10	NULL	30.05	0	0	0					
		12:35 AM	69.3	67.3	93	--	--	10	NULL	30.05	0	0	0					
		12:55 AM	69.4	67.3	93	--	--	10	NULL	30.04	0	0	0					
		1:15 AM	69.6	66.7	91	NE	3.0	10	NULL	30.04	0	0	0					
		1:35 AM	69.1	66.2	91	NE	5.0	10	NULL	30.02	0	0	0					
		1:55 AM	68.4	66.4	93	--	--	10	NULL	30.02	0	0	0.08					
		2:15 AM	68.4	66.4	93	--	--	10	NULL	30.01	0	0	0					
		2:35 AM	68.4	66	92	E	3.0	10	NULL	30.00	0	0	0					
		2:55 AM	68.5	66	92	E	5.0	10	NULL	30.00	0	0	0					
		3:15 AM	67.5	65.5	93	NE	3.0	10	NULL	30.00	0	0	0					
		3:35 AM	68.2	65.8	92	E	5.0	10	NULL	30.00	0	0	0					
		3:55 AM	67.3	65.5	94	NE	3.0	10	NULL	30.00	0	0	0					
		4:15 AM	67.8	66.2	95	E	3.0	10	NULL	30.00	0	0	0					
		4:35 AM	68.0	66.4	95	E	5.0	10	NULL	30.00	0	0	0					
		4:55 AM	67.6	66.6	96	E	3.0	10	NULL	30.00	0	0	0					
		5:15 AM	67.6	66.7	97	E	5.0	10	NULL	30.00	0	0	0					
		5:35 AM	67.6	66.9	98	E	6.0	10	NULL	30.01	0	0	0					
		5:55 AM	68.0	67.3	98	E	3.0	10	NULL	30.02	0	0	0					
		6:15 AM	68.0	67.5	98	E	5.0	7	NULL	30.01	0	0	0					
		6:35 AM	68.2	67.6	98	--	--	7	Fog/Mist	30.01	0	0	0					
		7:15 AM	68.0	67.8	99	NE	3.0	4	Fog/Mist	30.03	0	0	0					
	Sunrise	6:41 AM															16-19	Yes
Sunset	8:02 PM																	
5/7/2025-5/8/2025	7:15 PM	86.5	66.6	51	S	7.0	10	NULL	29.98	0	0	0						
	7:35 PM	85.5	67.8	56	SE	7.0	10	NULL	29.98	0	0	0						
	7:55 PM	84.4	68.4	59	SE	7.0	10	NULL	29.99	0	0	0						
	8:15 PM	82.8	70.7	67	E	8.0	10	Haze	29.99	0	0	0						
	8:35 PM	81.7	70.3	69	E	6.0	10	NULL	30.02	0	0	0						
	8:55 PM	80.2	69.8	71	E	7.0	10	NULL	30.02	0	0	0						
	9:35 PM	79.3	69.4	72	E	7.0	10	NULL	30.04	0	0	0						
	9:55 PM	78.8	69.8	74	SE	7.0	10	NULL	30.05	0	0	0						
	10:15 PM	78.4	69.6	74	SE	7.0	10	NULL	30.05	0	0	0						
	10:35 PM	78.8	69.8	74	S	6.0	10	NULL	30.06	0	0	0						
	10:55 PM	78.8	70.9	77	W	3.0	10	Thunderstorm in Vicinity	30.07	0	0	0						
	11:15 PM	78.8	69.8	74	S	6.0	10	NULL	30.07	0	0	0						
	11:35 PM	78.1	70	76	S	6.0	10	NULL	30.07	0	0	0						
	11:55 PM	77.7	69.1	75	S	6.0	10	NULL	30.07	0	0	0						
	12:15 AM	77.7	68.2	73	SE	8.0	10	NULL	30.06	0	0	0						
	12:55 AM	77.4	68.7	75	S	12.0	10	NULL	30.05	0	0	0						
	1:15 AM	77.2	69.3	77	S	9.0	10	NULL	30.04	0	0	0						
	1:35 AM	76.8	69.4	78	SE	9.0	10	NULL	30.03	0	0	0						
	1:55 AM	76.3	69.3	79	S	9.0	10	NULL	30.03	0	0	0						
	2:15 AM	75.2	69.8	83	SE	7.0	10	NULL	30.02	0	0	0						
	2:35 AM	75.4	69.1	81	SE	9.0	10	NULL	30.02	0	0	0						
	2:55 AM	75.4	68.7	80	SE	10.0	10	NULL	30.01	0	0	0						
	3:15 AM	75.6	68.9	80	SE	13.0	10	NULL	30.00	0	0	0						
	3:35 AM	75.2	68.7	80	SE	12.0	10	NULL	29.99	0	0	0						
	3:55 AM	75.2	68	78	SE	16.0	10	NULL	29.97	0	0	0						
	4:35 AM	75.0	68.4	80	--	--	10	NULL	30.00	0	0	0						
	4:55 AM	74.7	68.5	81	SE	8.0	10	NULL	30.02	0	0	0						
	5:15 AM	74.1	68.5	83	SE	9.0	10	NULL	30.01	0	0	0						
	5:35 AM	73.9	68.7	84	SE	8.0	10	NULL	30.01	0	0	0						
	5:55 AM	73.6	68.9	85	S	9.0	10	NULL	30.02	0	0	0						
	6:15 AM	73.8	68.9	85	S	9.0	10	NULL	30.02	0	0	0						
	6:35 AM	73.8	68.9	85	SE	9.0	10	NULL	30.03	0	0	0						
	6:55 AM	73.6	68.7	85	S	8.0	10	NULL	30.05	0	0	0						
	7:15 AM	73.6	68.9	85	S	6.0	10	NULL	30.06	0	0	0						
	Sunrise	6:41 AM													16-19	Yes		
	Sunset	8:03 PM																
5/8/2025-5/9/2025	7:15 PM	78.6	72	80	W	10.0	10	Light Rain	29.97	0	0	0						
	7:35 PM	77.7	71.4	81	W	7.0	10	NULL	29.96	0	0	0						
	7:55 PM	78.4	71.1	78	W	6.0	10	NULL	29.95	0	0	0						
	8:15 PM	78.6	71.2	78	NW	7.0	10	NULL	29.95	0	0	0						
	8:35 PM	78.1	72.1	82	W	7.0	10	NULL	29.96	0	0	0						
	8:55 PM	77.7	72.5	84	NW	7.0	10	NULL	29.99	0	0	0						
	9:15 PM	76.1	72.5	89	NW	7.0	10	NULL	30.00	0	0	0						
	9:35 PM	75.7	72.1	89	N	8.0	10	NULL	30.01	0	0	0						
	9:55 PM	75.0	72.3	91	N	8.0	10	NULL	30.02	0	0	0						
	10:15 PM	75.6	71.4	87	N	8.0	10	NULL	30.02	0	0	0						
	10:35 PM	75.2	69.8	83	NE	5.0	10	NULL	30.02	0	0	0						
	10:55 PM	74.3	68.4	82	N	6.0	10	NULL	30.03	0	0	0						
	11:15 PM	73.9	67.8	81	N	5.0	10	NULL	30.03	0	0	0						
	11:35 PM	73.4	68	83	NE	5.0	10	NULL	30.02	0	0	0						
	11:55 PM	73.6	67.5	81	--	--	10	NULL	30.02	0	0	0						
	12:15 AM	73.6	67.5	81	--	--	10	NULL	30.01	0	0	0						
	12:35 AM	73.0	67.5	83	--	--	10	NULL	30.02	0	0	0						
	12:55 AM	72.3	67.5	85	NE	3.0	10	NULL	30.01	0	0	0						
	1:15 AM	70.9	67.1	88	NE	5.0	10	NULL	30.01	0	0	0						
	1:35 AM	70.3	67.3	90	NE	3.0	10	NULL	30.00	0	0	0						
	1:55 AM	70.5	68	92	N	3.0	10	NULL	30.00	0	0	0						
	2:15 AM	70.3	68	92	--	--	10	NULL	29.99	0	0	0						
	2:35 AM	70.3	68.4	93	--	--	10	NULL	29.98	0	0	0						
	2:55 AM	70.7	68.5	93	--	--	10	NULL	29.97	0	0	0						
	3:15 AM	69.6	68.2	95	--	--	10	NULL	29.97	0	0	0						
	3:35 AM	69.8	68.5	96	--	--	10	NULL	29.96	0	0	0						
	3:55 AM	69.6	68.2	95	--	--	10	NULL	29.96	0	0	0						
	4:15 AM	69.1	68.2	97	NW	3.0	10	NULL	29.96	0	0	0						
	4:35 AM	69.4	68.4	96	--	--	10	NULL	29.96	0	0	0						
	4:55 AM	68.9	68	97	N	5.0	10	NULL	29.96	0	0	0						
	5:15 AM	68.4	67.8	98	N	3.0	10	NULL	29.96	0	0	0						
	5:35 AM	68.2	67.6	98	N	3.0	7	NULL	29.96	0	0	0						
	5:55 AM	67.8	67.5	99	--	--	7	NULL	29.96	0	0	0						
	6:15 AM	68.0	67.5	98	--	--	10	NULL	29.96	0	0	0						
	6:35 AM	68.2	67.5	98	--	--	2.5	Fog/Mist	29.97	0	0	0						
	6:55 AM	67.8	67.3	98	--	--	1.25	Fog/Mist	29.97	0	0	0						
7:15 AM	68.0	67.5	98	S	3.0	2	Fog/Mist	29.98	0	0	0							
Sunrise	6:40 AM													16-19	Yes			

Appendix D - NOAA National Weather Service Data																
Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Visibility	Weather	Pressure (in.)	Precipitation			Stations	With FBB Parameters	
											1 hr (in.)	3 hr (in.)	6 hr (in.)			
18	Sunset	8:03 PM													16-19	No - sustained wind speeds greater than 9 mph for more than 30 minutes within first 5 hours of survey; precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period
	5/9/2025-5/10/2025	7:15 PM	88.3	69.3	53	SE	12.0	10	NULL	29.92	0	0	0			
		7:35 PM	87.4	69.3	55	SE	8.0	10	NULL	29.92	0	0	0			
		7:55 PM	86.4	71.8	62	SE	8.0	7	Thunderstorm Rain	29.93	0	0	0			
		8:15 PM	81.9	73.2	75	--	--	10	Thunderstorm Light Rain	29.96	0.01	0	0			
		8:35 PM	78.3	70.5	77	NW	13.0	10	Thunderstorm in Vicinity	29.96	0.01	0	0			
		8:55 PM	78.8	69.8	74	NW	16.0	10	Thunderstorm in Vicinity	29.97	0.01	0	0			
		9:15 PM	72.7	67.3	83	N	10.0	10	Thunderstorm in Vicinity	29.98	0	0	0			
		9:35 PM	73.4	68.4	84	NW	8.0	10	NULL	29.99	0	0	0			
		9:55 PM	73.4	69.1	86	--	--	10	NULL	30.01	0	0	0			
		10:15 PM	75.7	70.5	84	NE	9.0	10	NULL	30.02	0	0	0			
		10:35 PM	74.7	70.5	87	N	3.0	10	NULL	30.02	0	0	0			
		10:55 PM	74.7	71.1	89	NW	7.0	10	NULL	30.02	0	0.01	0			
		11:15 PM	73.2	70.5	91	NW	7.0	10	Light Rain	30.02	0	0	0			
		11:35 PM	72.1	70.5	95	--	--	10	NULL	30.01	0	0	0			
		11:55 PM	72.3	70.3	94	--	--	10	NULL	30.01	0	0	0			
		12:15 AM	72.3	70.5	94	N	5.0	10	NULL	30.00	0	0	0			
		12:35 AM	71.2	70	96	NE	6.0	10	NULL	29.99	0	0	0			
		12:55 AM	70.9	69.8	96	NE	5.0	10	NULL	29.99	0	0	0			
		1:15 AM	70.3	68	92	E	8.0	10	NULL	29.99	0	0	0			
		1:35 AM	69.8	67.8	93	NE	5.0	10	NULL	29.98	0	0	0			
		1:55 AM	69.3	67.6	95	--	--	10	NULL	29.98	0	0	0.01			
		2:15 AM	69.1	67.6	95	--	--	10	NULL	29.98	0	0	0			
		2:35 AM	69.8	68	94	--	--	10	NULL	29.98	0	0	0			
		2:55 AM	69.4	68	95	--	--	10	NULL	29.97	0	0	0			
		3:15 AM	70.0	68.5	95	SE	3.0	10	NULL	29.95	0	0	0			
		3:35 AM	69.8	68	94	--	--	10	NULL	29.96	0	0	0			
		3:55 AM	71.2	69.6	95	S	6.0	10	NULL	29.96	0	0	0			
		4:15 AM	73.6	70.3	90	S	7.0	10	NULL	29.96	0	0	0			
		4:35 AM	73.8	70.3	89	S	8.0	10	NULL	29.96	0	0	0			
		4:55 AM	73.4	70	89	S	7.0	10	NULL	29.97	0	0	0			
		5:15 AM	72.7	69.6	90	S	8.0	10	NULL	29.96	0	0	0			
		5:35 AM	73.2	70	90	S	9.0	10	NULL	29.96	0	0	0			
		5:55 AM	73.8	70.3	89	S	9.0	10	NULL	29.96	0	0	0			
		6:15 AM	73.9	70.5	89	S	9.0	10	NULL	29.96	0	0	0			
		6:35 AM	74.5	71.2	90	S	10.0	10	NULL	29.97	0	0	0			
		6:55 AM	74.3	71.1	90	S	9.0	10	NULL	29.98	0	0	0			
		7:15 AM	74.7	71.1	89	S	10.0	10	NULL	29.99	0	0	0			
	7:35 AM	74.8	71.2	89	S	8.0	10	NULL	30.01	0	0	0				
	Sunrise	6:39 AM														
Sunset		8:04 PM														
19	5/10/2025-5/11/2025	7:15 PM	72.0	70.2	94	E	3.0	10	NULL	30.04	0	0	0			
		7:35 PM	72.3	70.5	94	SE	6.0	10	NULL	30.03	0	0	0			
		7:55 PM	72.1	70.7	95	E	6.0	10	Light Rain	30.02	0	0	0.28			
		8:15 PM	71.8	70.5	96	E	5.0	5	Fog/Mist	30.02	0	0	0			
		8:35 PM	71.6	70.7	97	E	5.0	3.5	Fog/Mist	30.02	0	0	0			
		8:55 PM	71.2	70.3	97	NE	3.0	10	NULL	30.03	0	0	0			
		9:15 PM	71.2	70.5	98	E	6.0	10	NULL	30.04	0	0	0			
		9:35 PM	71.8	70.3	95	E	7.0	10	NULL	30.05	0	0	0			
		9:55 PM	71.2	70	96	--	--	10	NULL	30.05	0	0	0			
		10:15 PM	70.9	69.6	96	E	7.0	10	NULL	30.05	0	0	0			
		10:35 PM	71.2	69.4	94	E	3.0	10	NULL	30.06	0	0	0			
		11:15 PM	72.9	70.5	92	SE	8.0	10	NULL	30.06	0	0	0			
		11:35 PM	73.4	71.2	93	SE	7.0	10	NULL	30.06	0	0	0			
		11:55 PM	73.6	71.8	94	SE	5.0	10	NULL	30.06	0	0	0			
		12:15 AM	75.2	73.4	94	SE	8.0	10	NULL	30.06	0	0	0			
		12:35 AM	74.7	72.5	93	SE	8.0	10	NULL	30.05	0	0	0			
		12:55 AM	74.8	72.5	92	SE	7.0	10	NULL	30.06	0	0	0			
		1:15 AM	75.2	72.9	92	SE	7.0	10	NULL	30.06	0	0	0			
		1:35 AM	75.2	73	93	SE	8.0	10	NULL	30.06	0	0	0			
		1:55 AM	75.4	73.2	93	SE	10.0	10	NULL	30.06	0	0	0			
		2:15 AM	75.6	73.2	92	SE	10.0	10	NULL	30.05	0	0	0			
		2:35 AM	75.7	73.4	92	SE	12.0	10	NULL	30.04	0	0	0			
		2:55 AM	75.6	73.6	94	SE	9.0	10	NULL	30.04	0	0	0			
		3:15 AM	75.6	73.4	93	SE	8.0	10	NULL	30.03	0	0	0			
		3:35 AM	75.6	73.4	93	--	--	10	NULL	30.02	0	0	0			
		3:55 AM	75.6	73.4	93	SE	10.0	10	NULL	30.02	0	0	0			
		4:15 AM	75.4	73.4	94	SE	8.0	10	NULL	30.03	0	0	0			
		4:35 AM	75.6	73.4	93	SE	12.0	10	NULL	30.02	0	0	0			
		4:55 AM	75.4	73.4	94	SE	10.0	10	NULL	30.01	0	0	0			
		5:15 AM	75.6	73.6	94	SE	8.0	10	NULL	30.01	0	0	0			
		5:35 AM	75.4	73.6	94	SE	8.0	10	NULL	30.01	0	0	0			
		5:55 AM	75.0	73.4	95	E	5.0	10	NULL	30.02	0	0	0			
		6:15 AM	73.0	72.3	98	E	5.0	10	NULL	30.03	0	0	0			
		6:35 AM	72.7	72	98	E	5.0	7	NULL	30.03	0	0	0			
		6:55 AM	73.4	71.6	94	E	5.0	0	NULL	30.03	0	0	0			
		7:15 AM	72.5	72	98	NE	3.0	7	NULL	30.05	0	0	0			
		Sunrise	6:39 AM													16-19
	Sunset	8:05 PM														
	20	5/11/2025 - 5/12/2025	7:35 PM	72.7	72	98	--	--	7	Thunderstorm Light Rain in Vicinity Fog/Mist	30.05	0.26	0	0		
			7:55 PM	72.9	72	97	SE	21.0	0.75	Rain Fog/Mist and Breezy	30.05	0.60	0	1.31		
8:15 PM			73.2	71.4	94	E	14.0	10	NULL	30.06	0	0	0			
8:35 PM			72.5	70.5	94	E	10.0	10	NULL	30.06	0	0	0			
8:55 PM			71.8	70	94	NE	8.0	10	NULL	30.05	0	0	0			
9:15 PM			71.1	69.1	94	--	--	4	Heavy Rain Fog/Mist	30.06	0.04	0	0			
9:35 PM			72.1	69.8	92	NE	10.0	10	NULL	30.06	0.04	0	0			
9:55 PM			71.1	70	96	NE	5.0	10	NULL	30.06	0.04	0	0			
10:15 PM			71.2	70.3	97	N	7.0	10	NULL	30.06	0	0	0			
10:35 PM			71.4	70.9	98	W	7.0	10	NULL	30.08	0	0	0			
10:55 PM			72.1	70.7	95	N	12.0	7	Rain	30.08	0.03	0.07	0			
11:15 PM			72	70.5	95	N	7.0	5	Rain Fog/Mist	30.07	0.07	0	0			
11:35 PM			72.7	71.1	95	NW	5.0	10	Light Rain	30.07	0.12	0	0			
11:55 PM			72.1	71.1	96	N	6.0	10	Light Rain	30.07	0.13	0	0			
12:15 AM			72.1	71.4	98	N	6.0	10	Light Rain	30.08	0.01	0	0			
12:35 AM			72	71.2	98	N	3.0	10	Rain	30.08	0.02	0	0			
12:55 AM			72	71.4	98	--	--	7	Rain Fog/Mist	30.08	0.08	0	0			
1:15 AM			72	71.6	99	--	--	3.5	Rain Fog/Mist	30.07	0.06	0	0			
1:35 AM			72	71.6	99	--	--	5	Rain Fog/Mist	30.06	0.12	0	0			
1:55 AM			71.8	71.6	99	S	5.0	7	Light Rain	30.06	0.15	0	0.45			
2:15 AM			72.3	72.1	99	--	--	10	Light Rain	30.06	0.01	0	0			
2:35 AM			72.9	72.7	99	SW	10.0	4	Heavy Rain Fog/Mist	30.05	0.07	0	0			
2:55 AM			73.6	73.2	99	--	--	10	Light Rain	30.05	0.13	0	0			
3:15 AM			73.8	73.2	98	S	12.0	10	NULL	30.05	0	0	0			
3:35 AM			73.4	73.4	1	SW	12.0	0	NULL	30.05	0	0	0			
3:55 AM			73.2	72	96	SW	13.0	10	NULL	30.04	0	0	0			
4:15 AM			72.7	71.2	95	S	9.0	10	NULL	30.04	0	0	0			
4:35 AM			72.1	70.7	95	S	8.0	0	NULL	30.02	0.01	0	0			
4:55 AM			71.8	70.5	96	S	8.0	10	Light Rain	30.02	0.01	0.14	0			
5:15 AM			71.6	71.6	100	S	9.0	10	Light Rain	30.03	0	0	0			
5:35 AM			71.6	70.7	97	S	6.0	10	NULL	30.03	0	0	0			
5:55 AM			71.6	70.9	98	--	--	10	NULL	30.03	0	0	0			
6:15 AM			72.1	71.2	97	SE	7.0	10	Light Rain	30.02	0	0	0			
6:35 AM			72.3	71.2	96	SE	8.0	10	NULL	30.02	0.01	0	0			
6:55 AM			72.9	71.6	96	SE	9.0	10	NULL	30.03	0.01	0	0			
7:15 AM			73.2	71.4	94	SE	10.0	10	NULL	30.03	0	0	0			
Sunrise			6:38 AM													16-19
Sunset		8:05 PM														

Appendix E

Acoustic Data Summary

Number of Kaleidoscope Pro Auto ID'd WAV files																Number of manually verified WAV files	
Station	Total recorded files	Classified as noise	Not assigned auto ID	Total auto ID'd to species level	Big brown bat (<i>Eptesicus fuscus</i>)	Eastern red bat (<i>Lasiurus borealis</i>)	Hoary bat (<i>Lasiurus cinereus</i>)	Northern yellow bat (<i>Lasiurus intermedius</i>)	Seminole bat (<i>Lasiurus seminolus</i>)	Southeastern myotis (<i>Myotis austroriparius</i>)	Northern Long-Eared Bat (<i>Myotis septentrionalis</i>)	Evening bat (<i>Nycticeius humeralis</i>)	Tricolored bat (<i>Perimyotis subflavus</i>)	Brazilian free-tailed bat (<i>Tadarida brasiliensis</i>)	Florida bonneted bat (<i>Eumops floridanus</i>)	Tricolored bat	Florida bonneted bat
1	13,352	10,739	596	2,017	29	4	305	66	64	0	0	14	6	1,516	13	1	0
2	3,208	814	668	1,726	130	18	222	160	244	2	0	48	37	863	2	26	0
3	5,451	2,148	871	2,432	318	27	305	415	45	16	0	70	122	1,101	13	97	0
4	5,612	1,956	1,075	2,581	233	23	433	71	251	1	0	263	59	1,241	6	40	0
5	2,838	1,268	428	1,142	38	19	198	50	66	4	0	31	41	690	5	27	0
6	3,264	1,041	602	1,621	66	12	364	56	69	7	0	37	49	955	6	30	0
7	10,027	1,561	2,824	5,642	1,432	211	444	245	304	8	0	1,672	103	1,214	9	98	1
8	5,631	964	1,349	3,318	168	59	556	356	149	12	0	205	13	1,780	20	12	3
9	18,019	1,785	5,571	10,663	770	108	2,146	426	302	17	0	506	29	6,279	80	25	3
10	9,253	2,425	2,411	4,417	110	77	473	218	693	1	1	270	34	2,533	7	21	2
11	14,861	4,371	3,391	7,099	307	25	2,338	219	313	27	0	196	10	3,638	26	9	3
12	6,611	939	1,922	3,750	214	88	590	130	392	2	0	170	7	2,155	2	6	0
13	11,962	4,090	2,142	5,730	115	1	1,367	87	44	0	0	25	6	4,074	11	6	0
14	4,757	3,179	355	1,223	11	0	340	3	17	0	0	10	1	742	99	1	0
15	6,829	1,955	1,468	3,406	183	18	503	177	142	11	0	98	6	2,263	5	5	1
16	7,367	4,260	968	2,139	160	11	466	150	49	5	0	12	5	1,277	4	4	0
17	8,756	2,253	1,592	4,911	154	10	2,032	90	43	0	0	20	8	2,544	10	3	0
18	15,150	8,223	1,986	4,941	249	137	1,430	205	41	4	1	75	17	2,776	6	15	1
19	6,998	1,381	1,835	3,782	320	185	561	537	114	46	0	176	66	1,764	13	64	0
Totals	159,946	55,352	32,054	72,540	5,007	1,033	15,073	3,661	3,342	163	2	3,898	619	39,405	337	490	14
Percentages		34.61%	20.04%	45.35%	3.13%	0.65%	9.42%	2.29%	2.09%	0.10%	0.00%	2.44%	0.39%	24.64%	0.21%	0.31%	0.01%

NOTE:
The following species were not included in Kaleidoscope Pro analysis due to rarity in South Florida: silver haired bat, fringed myotis, Palla's mastiff bat, gray myotis, and little brown myotis.

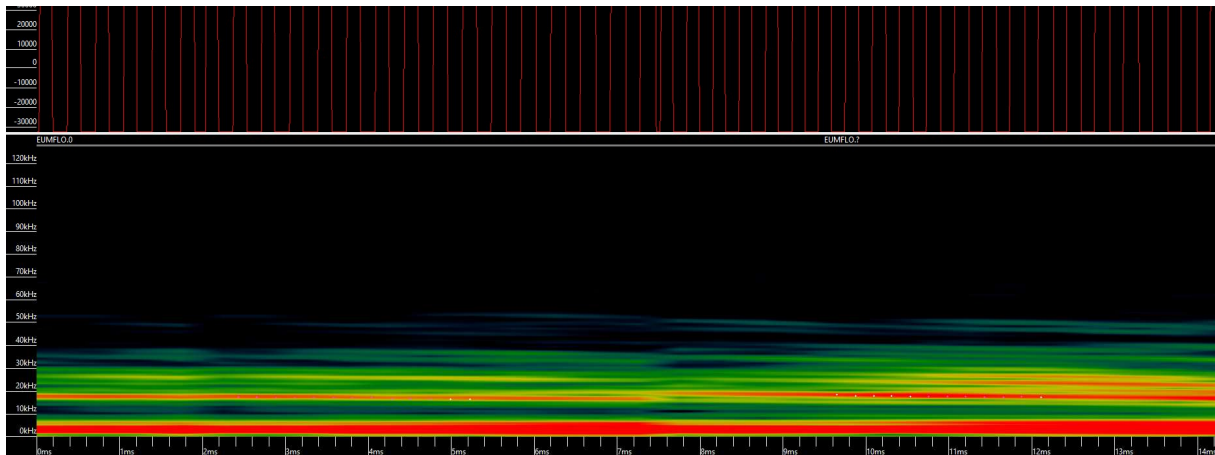
Appendix F

Florida Bonneted Bat and Tricolored Bat Results

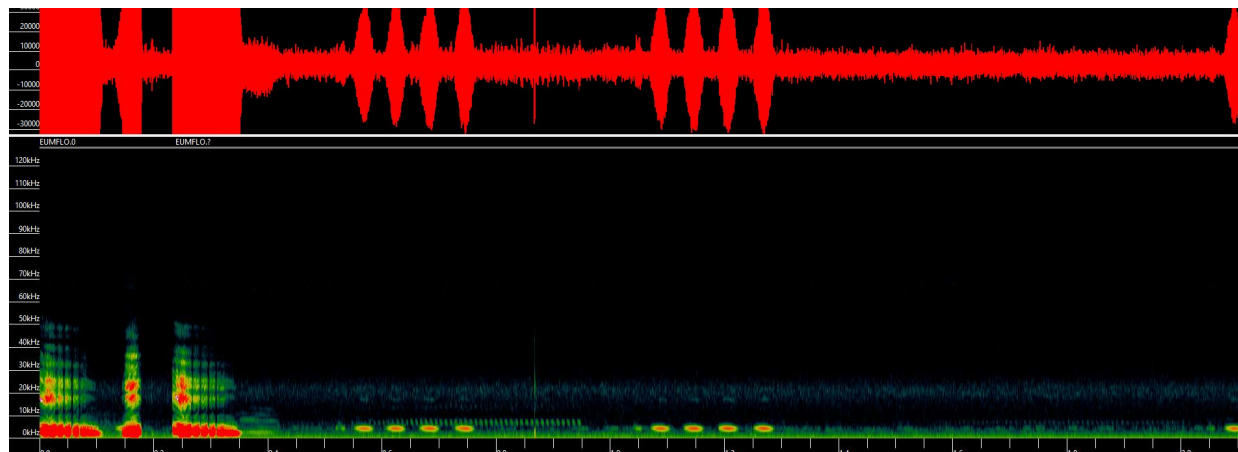
Florida Bonneted Bat Results: Misclassified Florida Bonneted Bat Calls

AutoID FBB Call. Detector 1 File ID: SR70-1-12_20250526_052150.wav
5-26-2025 05:21:50 (EDT)

Example of **Birds and Insects** from Detector 1



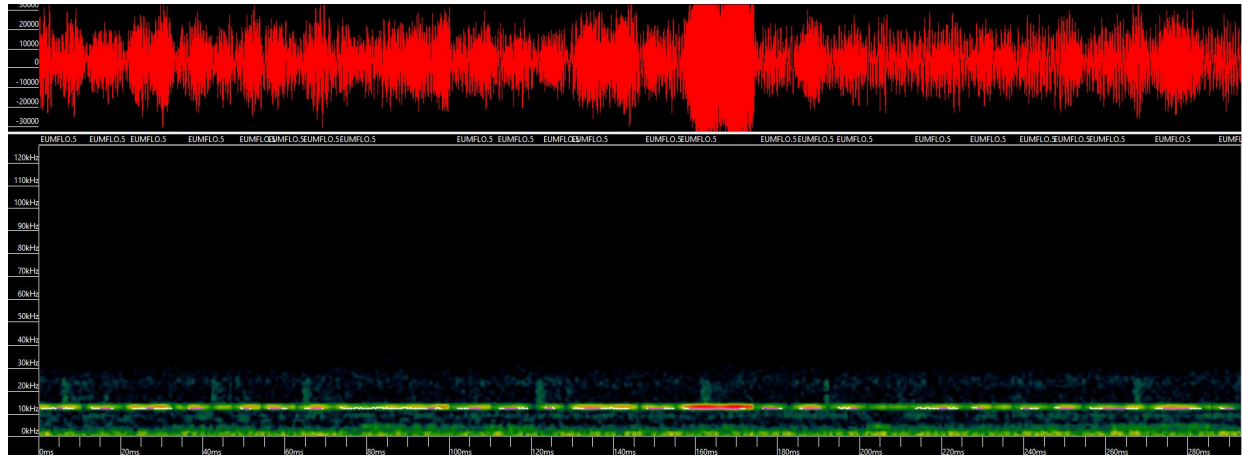
Compressed view



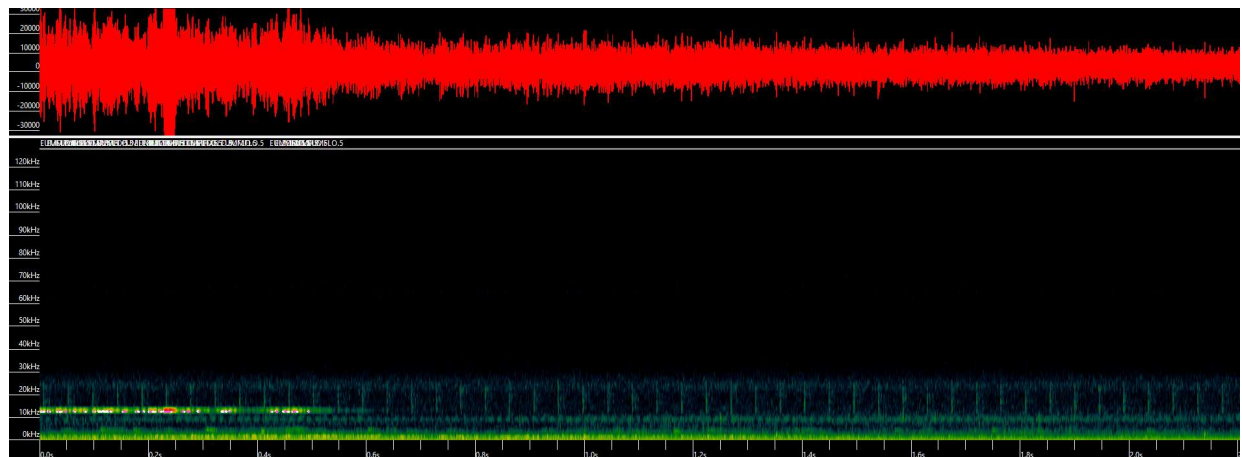
Normal time view

AutoID FBB Call. Detector 1 File ID: SR-70-1-12_20250524_193850.wav
5-24-2025 19:38:50 (EDT)

Example of **Road Noise** from Detector 1



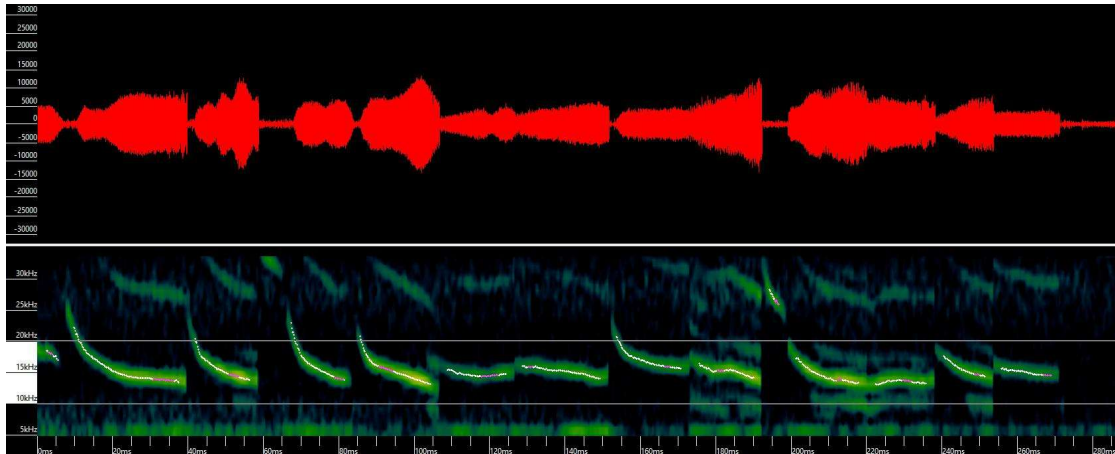
Compressed view



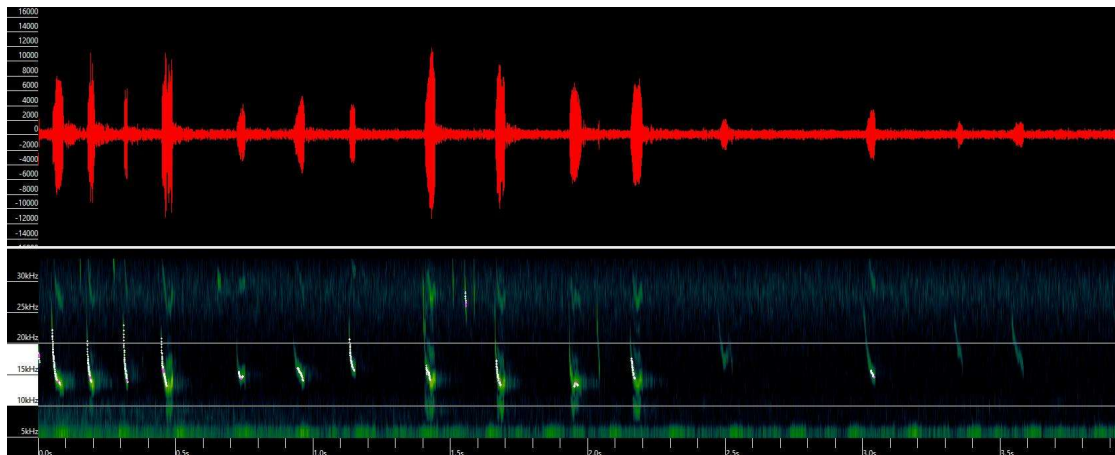
Normal time view

AutoID FBB Call. Detector 7 File ID: SR-70-7-12_20250529_040747.wav
5-29-2025 04:07:47 (EDT)

Example of **NOT EUMFLO - IND** from Detector 7



Compressed view

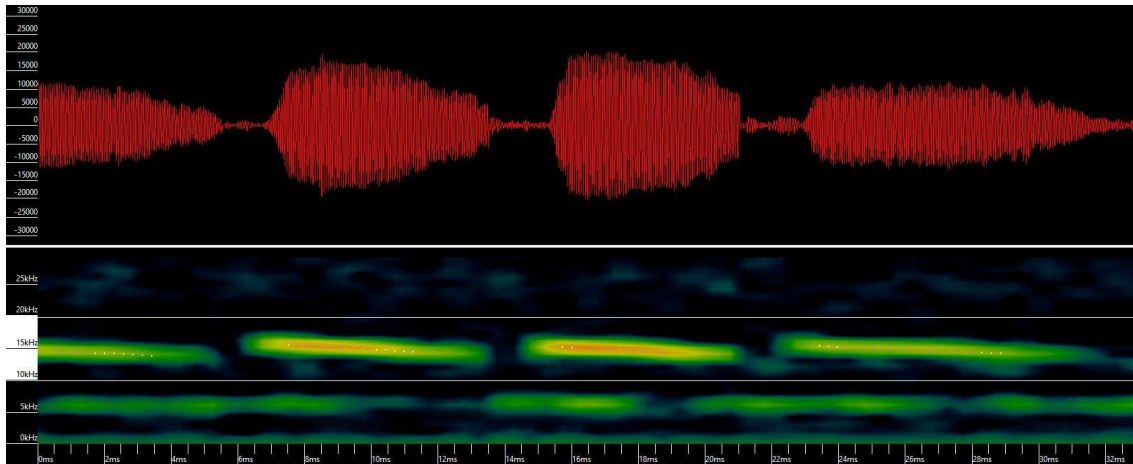


Normal time view

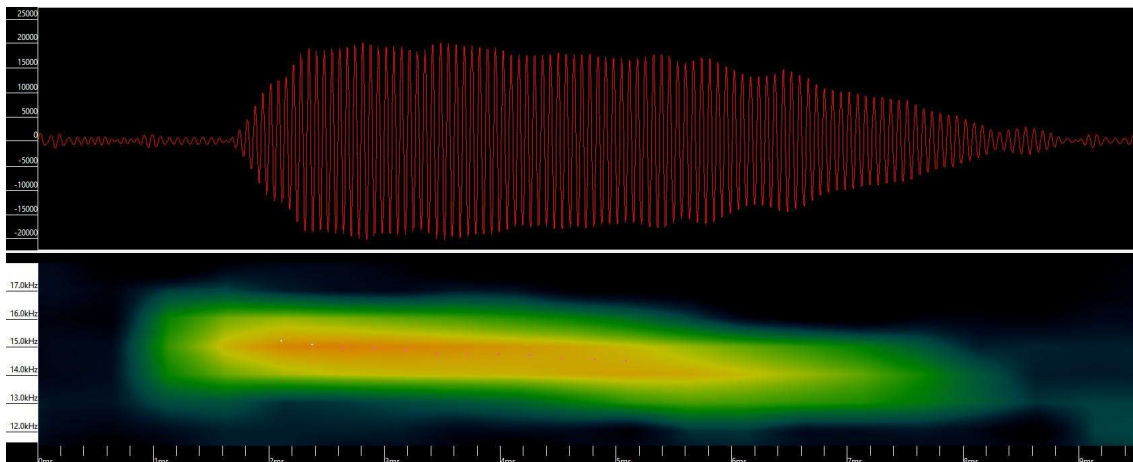
Florida Bonneted Bat Results: Confirmed Florida Bonneted Bat Calls

AutoID FBB Call. Detector 1 File ID: SR-70-7-12_20250515_214043.wav
5-15-2025 9:40:43 (EDT)

Example of **EUMFLO** from Detector 7



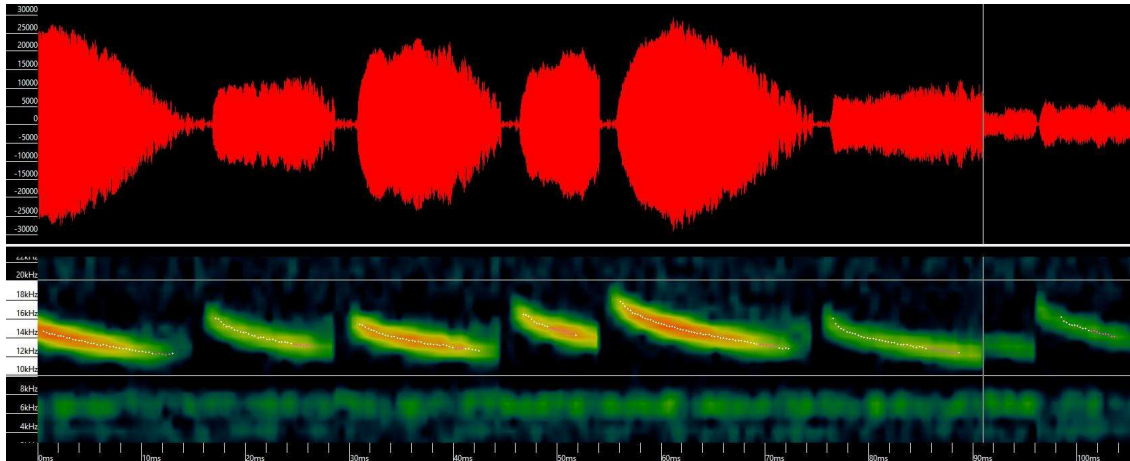
Compressed view



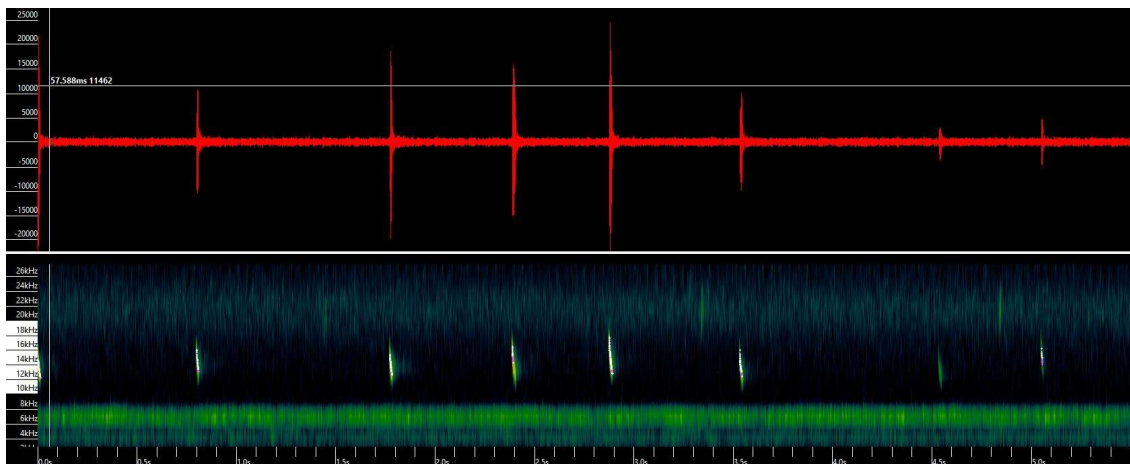
Compressed view single pulse

AutoID FBB Call. Detector 9 File ID: SR-70-9-12_20250519_212400.wav
5-19-2025 21:40:00 (EDT)

Example of **EUMFLO** from Detector 9



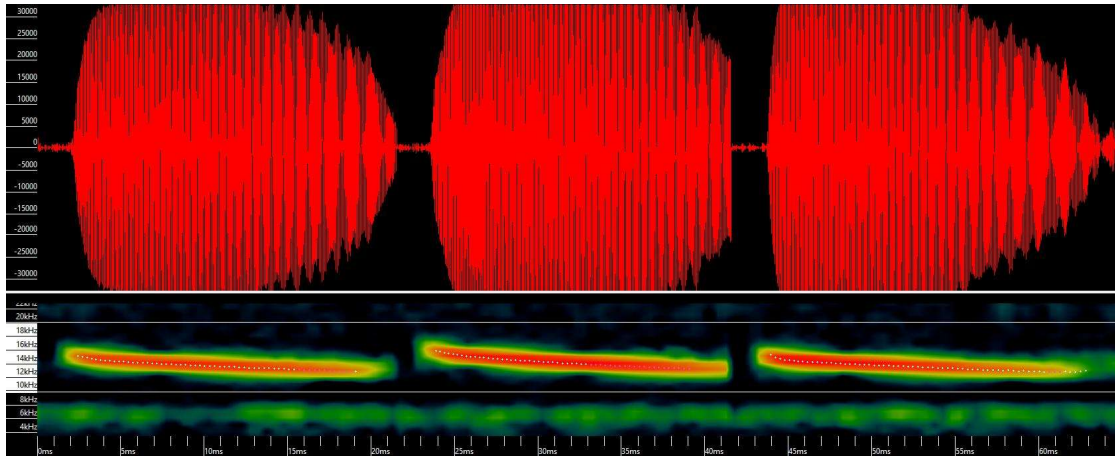
Compressed view



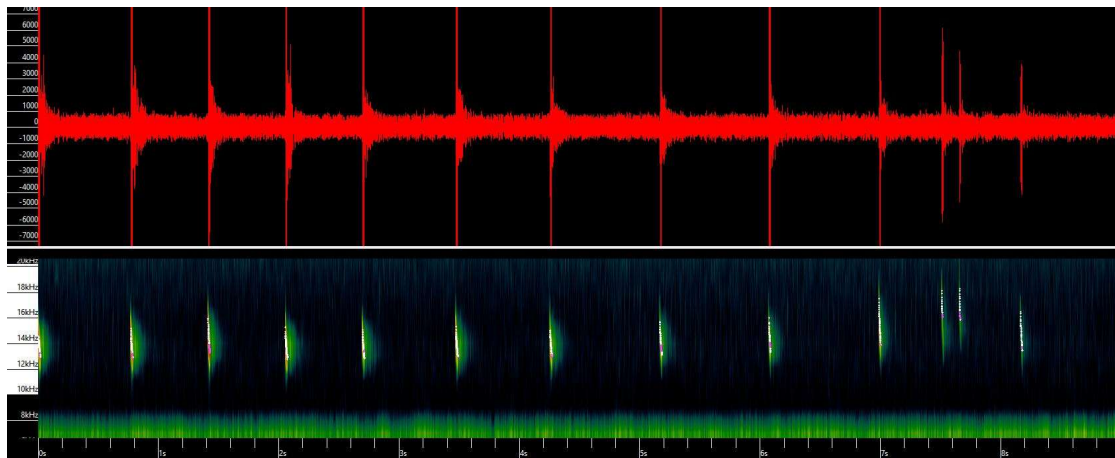
Normal time view

AutoID FBB Call. Detector 10 File ID: SR-70-10-12_20250517_215452.wav
5-17-2025 21:54:52 (EDT)

Example of **EUMFLO** from Detector 10



Compressed view

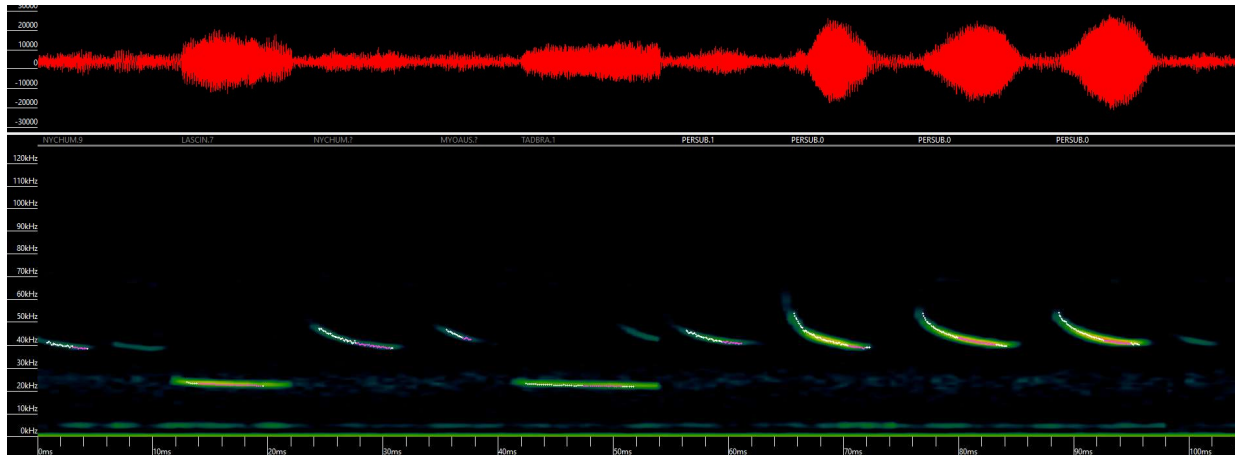


Normal time view

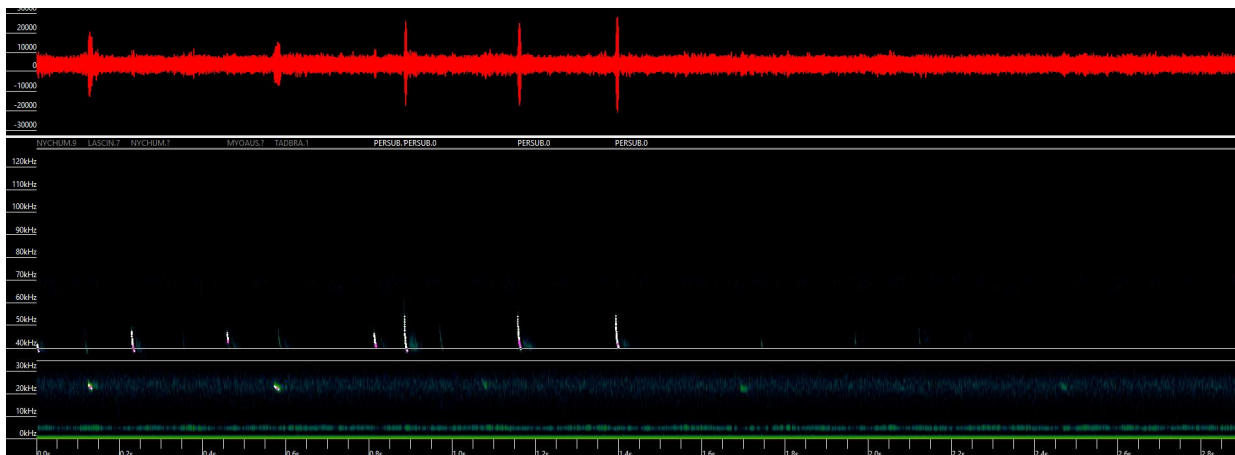
Tricolored Bat Results: Misidentified Tricolored Bat Calls

AutoID TCB Call. Detector 12 File ID: SR-70-12-12_20250517_040624.wav
5-17-2025 04:06:24 (EDT)

Example of **Inconclusive** from Detector 12



Compressed view

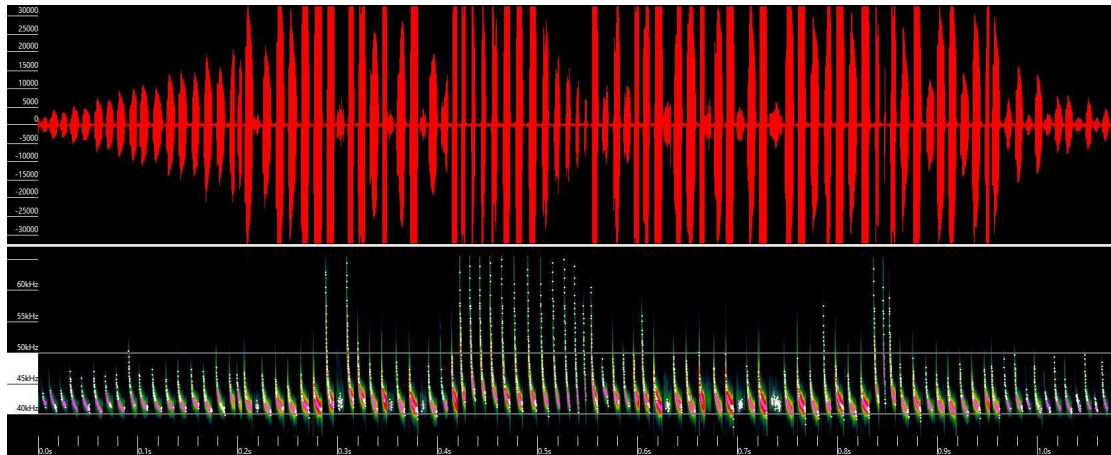


Normal time view

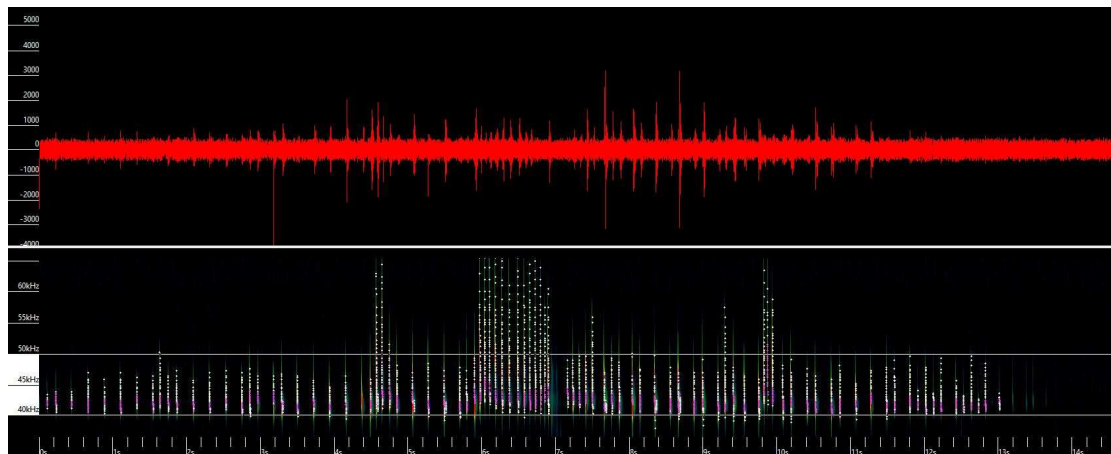
Tricolored Bat Results: Confirmed Tricolored Bat Calls

AutoID TCB Call. Detector 7 File ID: SR-70-7-12_20250517_223603.wav
5-17-2025 22:36:03 (EDT)

Example of **PERSUB** call from Detector 7



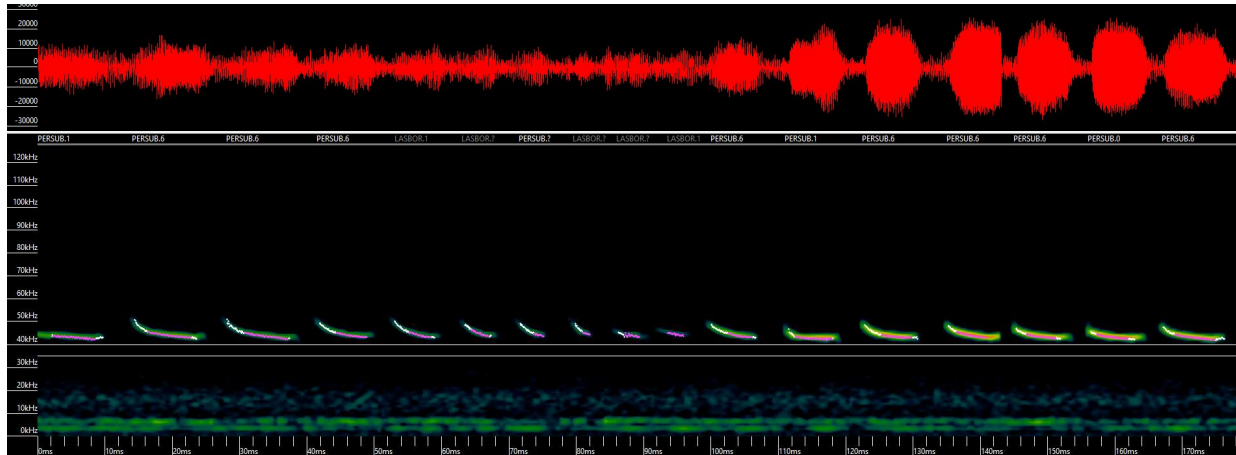
Compressed view



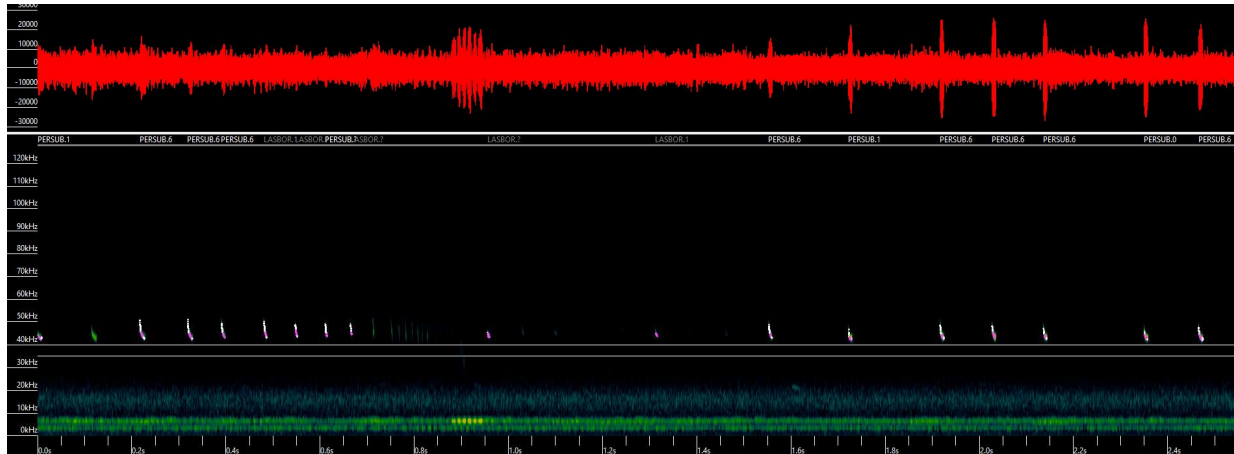
Normal time view

AutoID TCB Call. Detector 8 File ID: SR-70-8-12_20250519_215912.wav
5-19-2025 21:59:12 (EST)

Example of **PERSUB** from Detector 8



Compressed view



Normal time view

Florida Bonneted Bat Results: Positively Identified Florida Bonneted Bat Calls

Detector	AutoID	Manual ID	Recording Date	Recording Time	Sunrise	Sunset
7	EUMFLO	EUMFLO	5/15/2025	21:40:43	6:36	20:07
8	EUMFLO	EUMFLO	5/21/2025	0:04:41	6:33	20:11
8	EUMFLO	EUMFLO	5/21/2025	0:04:54	6:33	20:11
8	EUMFLO	EUMFLO	5/21/2025	0:41:47	6:33	20:11
9	EUMFLO	EUMFLO	5/19/2025	21:24:00	6:34	20:09
9	EUMFLO	EUMFLO	5/19/2025	21:50:56	6:34	20:09
9	EUMFLO	EUMFLO	5/21/2025	23:25:47	6:33	20:11
10	EUMFLO	EUMFLO	5/17/2025	21:54:31	6:35	20:08
10	EUMFLO	EUMFLO	5/17/2025	21:54:52	6:35	20:08
11	EUMFLO	EUMFLO	5/14/2025	23:22:02	6:36	20:07
11	EUMFLO	EUMFLO	5/19/2025	23:00:14	6:34	20:09
11	EUMFLO	EUMFLO	5/20/2025	20:18:32	6:34	20:10
15	EUMFLO	EUMFLO	5/18/2025	0:40:20	6:35	20:09
18	EUMFLO	EUMFLO	4/29/2025	19:42:57	6:47	19:57

Appendix G

Florida Bonneted Bat Consultation Key (2019)

Florida Bonneted Bat Consultation Key[#]

Use the following key to evaluate potential effects to the Florida bonneted bat (FBB) from the proposed project. Refer to the Glossary as needed.

- 1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1).....**Go to 2**
- 1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1).....**No Effect**
- 2a. Potential FBB roosting habitat exists within the project area.....**Go to 3**
- 2b. No potential FBB roosting habitat exists within the project area.....**Go to 13**
- 3a. Project size/footprint* $\leq$ 5 acres (2 hectares)..... **Conduct Limited Roost Survey (Appendix C) then Go to 4**
- 3b. Project size/footprint* $>$ 5 acres (2 hectares).....**Conduct Full Acoustic/Roost Surveys (Appendix B) then Go to 6**
- 4a. Results show FBB roosting is likely**Go to 5**
- 4b. Results do not show FBB roosting is likely.....**MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**
- 5a. Project will affect roosting habitat.....**LAA⁺ Further consultation with the Service required.**
- 5b. Project will not affect roosting habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**
- 6a. Results show some FBB activity.....**Go to 7**
- 6b. Results show no FBB activity.....**No Effect**
- 7a. Results show FBB roosting is likely.....**Go to 8**
- 7b. Results do not show FBB roosting is likely.....**Go to 10**
- 8a. Project will not affect roosting habitat.....**Go to 9**
- 8b. Project will affect roosting habitat.....**LAA⁺ Further consultation with the Service required.**
- 9a. Project will affect* $>$ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat.....**LAA⁺ Further consultation with the Service required.**
- 9b. Project will affect* $\leq$ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**
- 10a. Results show high FBB activity/use.....**Go to 11**
- 10b. Results do not show high FBB activity/use.....**Go to 12**
- 11a. Project will affect* $>$ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **LAA⁺ Further consultation with the Service required.**
- 11b. Project will affect* $\leq$ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**
- 12a. Project will affect* $>$ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **LAA⁺ Further consultation with the Service required.**
- 12b. Project will affect* $\leq$ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

- 13a. FBB foraging habitat exists within the project area and foraging habitat will be affected.....**Go to 14**
- 13b. FBB foraging habitat exists within the project area and foraging habitat will not be affected **OR** no FBB foraging habitat exists within the project area.....**No Effect**
- 14a. Project size* > 50 acres (20 hectares) (wetlands and uplands)**Go to 15**
- 14b. Project size* ≤ 50 acres (20 hectares) (wetlands and uplands) **MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**
- 15a. Project is within 8 miles (12.9 kilometers) of high quality potential roosting areas^.....**Conduct Full Acoustic Survey (Appendix B) and Go to 16**
- 15b. Project is not within 8 miles (12.9 kilometers) of high quality potential roosting area^.....**MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**
- 16a. Results show some FBB activity.....**Go to 17**
- 16b. Results show no FBB activity.....**No Effect**
- 17a. Results show high FBB activity/use.....**LAA+ Further consultation with the Service required.**
- 17b. Results do not show high FBB activity/use..... **MANLAA-P if BMPs (Appendix D) used and survey reports submitted. Programmatic concurrence.**

If you are within the urban environment and you are renovating an existing artificial structure (with or without additional ground disturbing activities), these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance

*Includes wetlands and uplands that are going to be altered along with a 250- foot (76.2- meter) buffer around these areas if the parcel is larger than the altered area.

+Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations.

^Determining if **high quality potential roosting areas** are within 8 mi (12.9 km) of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.