



ENVIRONMENTAL & STATISTICAL CONSULTANTS

4007 State Street, Suite 109, Bismarck, ND 58503
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

August 12, 2016

Sean Flannery
Glacier Ridge Wind Farm, LLC
330 2nd Avenue South, Suite 820
Minneapolis, Minnesota 55401

**RE: Glacier Ridge Wind Farm Project
Northern Long-eared Bat 2016 Summer Presence/Absence Survey**

Dear Mr. Flannery,

Glacier Ridge Wind Farm, LLC requested that Western EcoSystems Technology, Inc. (WEST) implement the U.S. Fish and Wildlife Service's (USFWS) 2016 Range-Wide Indiana Bat Summer Survey Guidelines¹ to determine the presence/absence of the northern long-eared bat within the Glacier Ridge Wind Farm Project (Project). The USFWS recommends use of the Indiana bat survey guidelines for the northern long-eared bat, as specific guidelines for northern long-eared bats are not available. The Glacier Ridge Wind Farm – Bat Acoustic Survey Plan was provided to the USFWS for their review on July 5, 2016 prior to implementation; no comments were received. Based on the current Project boundary, there are approximately 700 acres of wooded areas within the Project boundary. The USFWS guidelines call for a minimum of two sample locations each sampled for two nights (total of four detector nights) for each 123 acres of woodlands. Based on the amount of wooded habitat, the Project required that 11 locations (Figure 1) be surveyed for 2 nights each, for a total of 22 detector-nights.

Eleven detectors were placed in habitat that would likely attract bats commuting between roosting and foraging areas (e.g., along forest edges and along forest corridors) in adherence with the USFWS guidelines. Detectors were deployed from July 15 until July 21, during which adequate night-time sample conditions of low wind (below 9 mph), mild temperatures (above 50°F), and lack of sustained precipitation (less than 1 hour) occurred a minimum of two nights at each sample location, for a total minimum of 22 detector-nights, based on local weather stations. Other nights had elevated winds or sustained periods of rain. Regardless, call data from all nights from all detectors were analyzed.

Echolocation call analysis followed the acoustic survey guidelines, which involves a combination of automated species identification software and qualitative review by an acoustic expert. Echolocation call data were reviewed using Kaliedoscope version 3.1.7, one of the candidate

¹ <https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>



ENVIRONMENTAL & STATISTICAL CONSULTANTS

4007 State Street, Suite 109, Bismarck, ND 58503
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

acoustic identification programs recommended by USFWS². WEST selected the North Dakota subset of 6 species—which includes northern long-eared bats—from the Bats of North America 3.1.7 classifier, and used the recommended sensitivity setting of -1 (Liberal). Kaleidoscope probabilistically identifies echolocation calls to species based on statistical comparison of the unknown calls to known calls. If the program identified potential northern long-eared bat calls, or identified a night that northern long-eared bats were likely present (Presence p-value greater than 0.05), then qualitative identification was performed to determine if calls were likely to have been produced by northern long-eared bats or other species. All calls that were initially identified as potential northern long-eared bat calls through the software were reviewed Jeff Gruver, (WEST), a recognized bat acoustic expert, per USFWS guidelines. Qualitative review was based on Mr. Gruver's extensive experience with bat acoustics, and relied primarily on comparison of calls recorded at the site to known calls from northern long-eared and other species (e.g., little brown bats) that can produce calls similar to northern long-eared bats.

No northern long-eared bat calls were recorded at any station during the sampling period, indicating probable absence of northern long-eared bats within the Project boundary.

Please let me know if you have any questions or need further information.

Sincerely,

Clayton Derby
Senior Manager

² <http://www.fws.gov/midwest/endangered/mammals/inba/surveys/inbaAcousticSoftware.html>

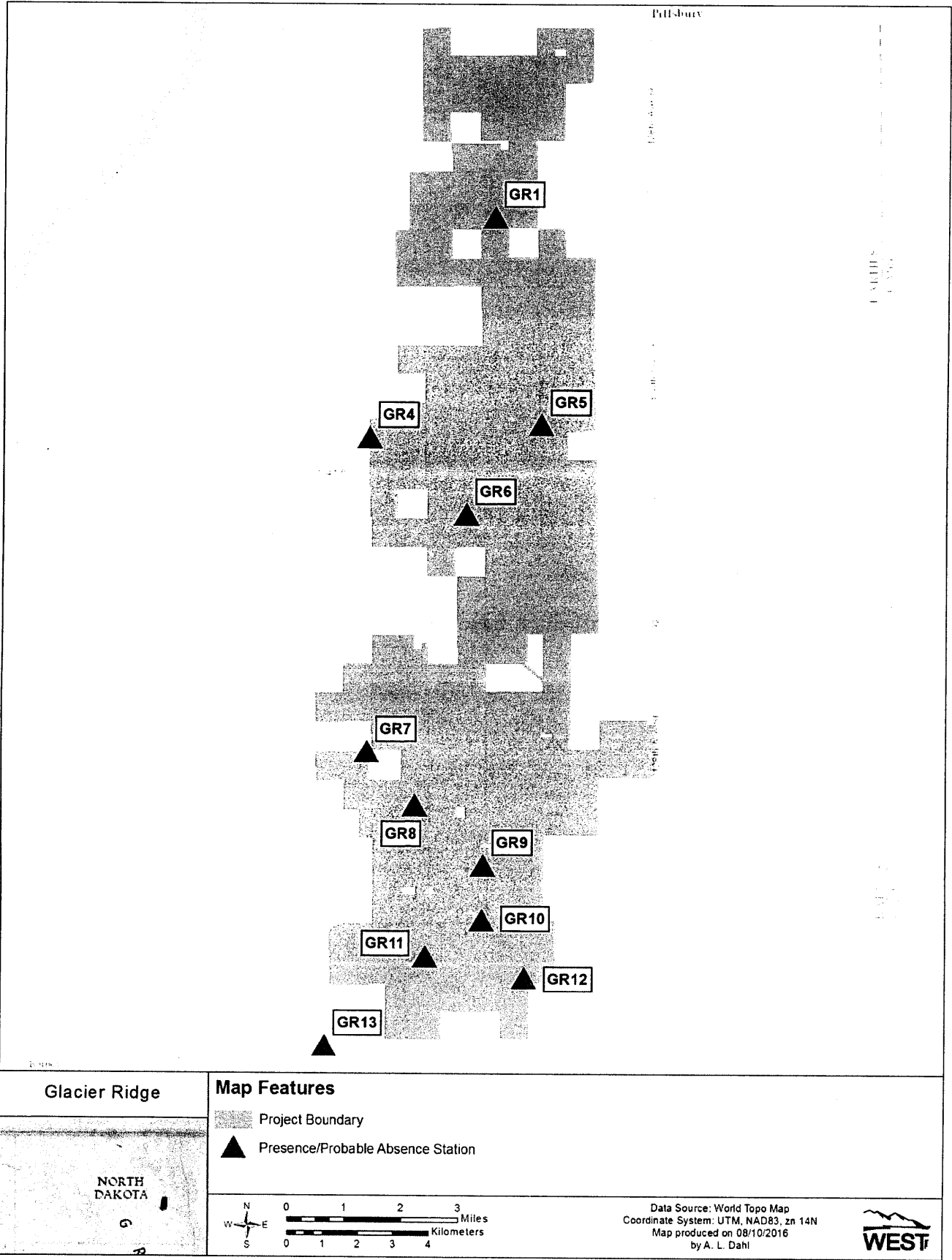


Figure 1. Anabat sample locations for the Glacier Ridge Wind Farm Project in 2016.