ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES
1650 Ramada Drive, Suite 180, Paso Robles, CA 93446
(805) 237-9626 • Fax (805) 237-9181 • www.althouseandmeade.com

July 17, 2023

Proposal
No. 2808.03

Emma Pelton
Senior Conservation Biologist
Endangered Species Program
Xerces Society
Portland, OR
Cell: (503) 212-0706
emma.pelton@xerces.org

Subject: Initial Wind Study for Monarch Habitats at VSFB

Althouse and Meade, Inc. (A&M) is pleased to provide this proposal per your request for the following services. This work serves as a first step to support Xerces' larger "Super Study" goals to improve our understanding of forest structure at monarch overwintering groves.

Task 1. Site selection and preliminary wind study.

Review the existing sites on Vandenberg Space Force Base (VSFB) and select a suitable site for a pilot wind modeling study. The chosen site should have a significant population of overwintering monarch butterflies and be free from any study-interfering restrictions (e.g., military access and instrumentation). Existing LiDAR point cloud data will be requested from VSFB to support the study. Utilizing existing airport weather data, an analysis will be conducted to determine prevailing wind characteristics, including descriptions of wind events, typical conditions, and extreme wind events. Spatial analysis will be employed to prioritize sites with dynamic wind conditions. Terrain impact on instrument installation and design simplicity will also be evaluated, with preference given to relatively flat and accessible sites. Additionally, an on-site visit will be conducted in collaboration with monarch overwintering experts to assess potential groves.

Deliverables:

- Detailed analysis of potential sites for the wind modeling study, including advantages and disadvantages of each site, presented in a final report.
- Analysis of historical wind data at VSFB, including a set of model parameters for Task 2. Findings will be presented in final report.

Cost Estimate: $9,000

Task 2. Conduct optimal sensor location study.

In this task, an optimal sensor location study will be conducted at the selected site. Utilizing VSFB LiDAR data, the site will be digitally reconstructed, and various wind simulations will be performed under different conditions. Potential sensor locations will be identified to create a population of simulated wind speed values, considering all simulation conditions. The maximum entropy algorithm will be employed to design an optimized sensor layout, determining the necessary number of sensors for a comprehensive wind study.

Deliverables:

- Section in final report detailing methods and findings of the optimal sensor location study. A specific plan for wind sensor locations within the selected study site at VSFB will be included.

Cost Estimate: $12,000

Task 3. Determination on wind sensors and validation.

Evaluate the suitability of California Department of Fish and Wildlife wind meters, specifically WindLog anemometers, which are available for this study. Efforts will be made to troubleshoot and ensure the proper functioning of the equipment, including seeking manufacturer support if required. If the existing wind meters are deemed unreliable or unsuitable, alternative equipment options will be researched. This may include the development of custom data loggers, with consideration given to the time required for instrument construction. Regardless of the chosen path, wind meters will undergo offsite testing and validation against A&M Kestrel anemometers to verify their accuracy.

Deliverables:

- Section within the final report detailing decision rationale on the use of existing anemometers (WindLog). If new equipment is necessary, the report will include recommendations on the specific equipment to be purchased.
- Results and methods of the validation efforts of the selected anemometers against A&M Kestrel instruments.

Cost Estimate: $9,000

Total Cost Estimate: $30,000

Timing: Work will begin upon return of our signed proposal and retainer. This proposal is valid for 45 days.

Terms: Contract is a Not to Exceed estimate to be billed on a Time and Materials (T&M) basis.

Payment for services

Payment is due upon presentation of invoice and must be received within 30 days of invoice date. If payment is not received within 30 days of invoice date a finance charge (1.5% per month) will be assessed from the invoice date. Please contact us if other arrangements are necessary. Melanie Munns (melanie@alt-me.com) is our point of contact for invoicing.

Acceptance of proposal
To accept this proposal, please initial and sign below and return one copy to our office. Also, please provide billing information and any additional contractual requirements for your accounts payable.

Thank you for the opportunity to be of service.

Proposal offered by

LynneDee Althouse
Principal
For Althouse and Meade, Inc.

Proposal accepted by

Client:

For:

Date:

Billing Party:

Billing Address:

Billing Email: _____