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Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

**State of West Virginia
 Solicitation Response**

Proc Folder : 547217
Solicitation Description : Addendum 1 - Bat Survey- Camp Dawson
Proc Type : Central Purchase Order

Date issued	Solicitation Closes	Solicitation Response	Version
	2019-02-25 13:30:00	SR 0603 ESR02251900000003877	1

VENDOR
000000174326 ENVIRONMENTAL SOLUTIONS & INNO

Solicitation Number: CRFQ 0603 ADJ1900000009

Total Bid : \$64,100.00 **Response Date:** 2019-02-25 **Response Time:** 09:10:50

Comments:

FOR INFORMATION CONTACT THE BUYER
 Stephanie L Gale
 (304) 558-8801
 stephanie.l.gale@wv.gov

Signature on File	FEIN #	DATE
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Bat Survey-Camp Dawson Army Training Site				\$64,100.00

Comm Code	Manufacturer	Specification	Model #
77111507			

Extended Description : Critical Fauna Survey for the Indiana Bat and the Northern Long-Eared Bat per the attached specifications.



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 34 — Service - Prof

Proc Folder: 547217

Doc Description: Addendum 1 - Bat Survey- Camp Dawson

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2019-02-20	2019-02-25 13:30:00	CRFQ 0603 ADJ1900000009	2

BID RECEIVING LOCATION

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 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Environmental Solutions & Innovations, Inc.
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Signature X

FEIN # 31-1697213

DATE 25 February 2019

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

Addendum

Addendum No. 1 issued to publish the following:

1. The vendor questions and agency answers.
2. To attach the Endangered Species Management Plan as a PDF.
3. The Executive Summary for years 2013 and 2016

End of Addendum

Request for Quotation

(fauna survey for the Indiana Bat and the Northern Long-Eared Bat)

The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Army National Guard's Environmental Office to establish a one-time contract providing all professional and technical personnel, labor, facilities, equipment, materials, transportation and supplies needed to perform a critical fauna survey for the Indiana Bat and the Northern Long-Eared Bat at the Camp Dawson Army Training site near Kingwood, in Preston County, WV. per the specifications and Terms and Conditions as attached hereto.

INVOICE TO		SHIP TO	
DIVISION ENGINEERING & FACILITIES ADJUTANT GENERALS OFFICE 1707 COONSKIN DR		FACILITY MAINTENANCE MANAGER CAMP DAWSON ARMY TRAINING SITE 240 ARMY RD	
CHARLESTON	WV25311	KINGWOOD	WV 26537-1077
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Bat Survey-Camp Dawson Army Training Site				

Comm Code	Manufacturer	Specification	Model #
77111507			

Extended Description :

Critical Fauna Survey for the Indiana Bat and the Northern Long-Eared Bat per the attached specifications.

RESPONSE TO REQUEST FOR QUOTE
CRITICAL FAUNA SURVEY FOR
INDIANA BATS AND NORTHERN LONG-EARED BATS ON
CAMP DAWSON ARMY TRAINING SITE
KINGWOOD, WEST VIRGINIA (PRESTON COUNTY)
SOLICITATION NUMBER: CRFQ ADJ1900000009

25 February 2019

Prepared for:



Ms. Stephanie Gale, Senior Buyer
Department of Administration, Purchasing Division
2019 Washington Street, East
Charleston, WV 25305

Prepared by:



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Ravenna, OH • Indianapolis, IN • Orlando, FL • Springfield, MO • Pittsburgh, PA • Teays Valley, WV

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1.0 Introduction

Environmental Solutions & Innovations, Inc. (ESI) is pleased to respond to the West Virginia Purchasing Division's Request for Quote (RFQ) on behalf of the West Virginia Army National Guard's (WVARNG) Camp Dawson Army Training Site's (Camp Dawson) Environmental Office (Solicitation Number CRFQ ADJ1900000009). The intent of the RFQ is to establish a contract providing all professional and technical personnel, labor, facilities, equipment, materials, transportation, and supplies needed for a critical fauna survey for Indiana (*Myotis sodalis*) and northern long-eared (*Myotis septentrionalis*) bats. A completed Pricing Page is provided in Appendix A.

ESI understands the project has two primary objectives: 1) to determine whether Indiana and/or northern long-eared bats occur on site, and 2) to better characterize species of bats present. Our ability to leverage three interlocking components of expertise within our team ensures Camp Dawson receives professionally executed surveys. These areas of expertise encompass:

- Extensive team of recognized bat experts, including leading experts on Indiana and northern long-eared bats;
- Comprehensive experience working on bats in West Virginia and throughout the east;
- Previous experience working on Camp Dawson and on other Department of Defense (DoD) installations.

2.0 Qualifications

ESI's 19-year track record of completing hundreds of projects affirms our reputation as *the* bat experts. We boast a large staff of qualified bat biologists who work extensively with protected bats including the federally endangered Indiana bat, the federally threatened northern long-eared bat, and many species of bats considered endangered or of special concern at state or regional levels. Our staff includes individuals involved in developing and managing some of the largest and most significant projects related to Indiana bats and their habitats including:

- Completing preliminary studies and long-term monitoring associated with the Indiana Department of Transportation's I-69 Expansion;

- Designing, managing, and monitoring conservation properties at the Indianapolis Airport;
- Leading the Indiana Department of Natural Resources' Winter Cave Surveys since 1980;
- Serving as technical lead for an HCP under development by the Pennsylvania Game Commission and the Pennsylvania Department of Conservation and Natural Resources that addresses the effects of forestry on the Indiana and northern long-eared bats;
- Developing acoustic and habitat evaluation techniques now widely used to survey for bats.

Members of our staff also served on the U.S. Fish and Wildlife Service (USFWS) sponsored Recovery Team for the Indiana bat and are part of a USFWS group working to develop forest management practices for the northern long-eared bat. We are regulatory professionals and routinely conduct presence/absence surveys using mist netting and/or acoustic surveys throughout the range of both target species. In West Virginia, we completed more than 3500 net nights over the past five years. In addition, we often collaborate with state National Guard facilities including the WVARNG and Camp Dawson where we completed mist net studies in 2002 and 2006. We frequently publish on bat species in the primary literature including a paper entitled "Bats of Camp Dawson, West Virginia: Relative Abundance, Habitat Use, and Periods of Activity" published by the West Virginia Academy of Science.

An overview of our staff's qualifications is provided in Table 1. The following sections provide a more detailed snapshot of the project management team's experience and expertise. Resumes for the management team are presented in Appendix B.

2.1 Management Team

ESI's management team for this project includes senior biologists with a long history of working with the two target species and for the DoD. Each team member holds range-wide permits from USFWS as well as scientific collecting permits from the West Virginia Division of Natural Resources (WVDNR; 2019 permit renewals in review) that allows for capture and handling of bats, including the federally listed Indiana and northern long-eared bats.

2.1.1 Dr. Virgil Brack – Principal Scientist

As ESI's Chief Executive Officer and Principal Scientist, Dr. Virgil Brack has ultimate responsibility for the success of Camp Dawson's project. Dr. Brack is a Certified Wildlife Biologist (The Wildlife Society) and a Certified Senior Ecologist (Ecological Society of America) with 35 years of experience addressing regulatory issues related to natural resources. He has extensively studied bats and their habitats. His Master's thesis explored how temperature affects hibernation duration in several species of bats, while his Ph.D. Dissertation provided a new window into the biology of the

Table 1. Qualifications of ESI Bat Biologists

Staff Member	Permit		Indiana and Northern Long-eared Bat Experience				Highest Level of Education	Experience (Years)
	USFWS Federal Permit	West Virginia Permit	Acoustic Surveys	Mist Net Surveys	Handling and Identification of Bats to Species	Work on DoD Facilities		
Management Team								
V. Brack	✓	✓	✓	✓	✓	✓	Ph.D.	35
D. Sparks	✓	✓	✓	✓	✓	✓	Ph.D.	26
V. Clarkston	✓	✓	✓	✓	✓	✓	M.S.	10
P. Moore	✓	✓	✓	✓	✓	✓	M.S.	10
Field and Support Staff								
P. Arant	✓	✓	✓	✓	✓		B.S.	4
B. Andersen		✓	✓	✓	✓		M.S.	4
C. Ardito	✓	✓	✓	✓	✓	✓	B.S.	6
K. Armstrong	✓	✓	✓	✓	✓	✓	M.S.	8
C. Boggs	✓	✓	✓	✓	✓	✓	B.S.	10
D. Brack	✓	✓	✓	✓	✓		M.S.	15
S. Brodnick	✓	✓	✓	✓	✓	✓	B.S.	10
B. Dennis	✓	✓	✓	✓	✓	✓	B.S.	9
N. Gikas	✓	✓	✓	✓	✓	✓	M.S.	12
D. Gilbert		✓	✓	✓	✓	✓	B.S.	7
B. Hale	✓		✓	✓	✓	✓	M.S.	11
D. Jeffcott	✓	✓	✓	✓	✓	✓	--	17
J. Johnson	✓		✓	✓	✓	✓	M.S.	7
D. Judy	✓	✓	✓	✓	✓	✓	M.S.	12
C. Kwolek			✓	✓	✓	✓	B.S.	3
S. McKinley	✓	✓	✓	✓	✓	✓	--	9
M. Mairose	✓	✓	✓	✓	✓	✓	B.A.	5
B. Meyer	✓	✓	✓	✓	✓	✓	B.S.	11
K. Price		✓		✓	✓		B.A.	3
T. Remick		✓	✓	✓	✓	✓	M. S.	6
L. Robbins	✓	✓	✓	✓	✓	✓	Ph.D.	35
T. Russel	✓	✓	✓	✓	✓	✓	B.A.	5
J. Van Deventer	✓	✓	✓	✓	✓	✓	B.S.	7
J. Veilleux	✓	✓	✓	✓	✓	✓	Ph.D.	22
J. Wilson	✓	✓	✓	✓	✓	✓	M.S.	17

endangered Indiana bat. He designs, directs, and implements innumerable surveys for bats, studies of bat biology, along with assessments of summer and winter habitat often in collaboration with the DoD. Two previous survey efforts at Camp Dawson were directed by Dr. Brack.

In addition, Dr. Brack was a member of the USFWS Recovery Team for the federally endangered Indiana bat. He directed technical development of a “Habitat Suitability Index Model” for components of the summer habitat of the Indiana bat. The habitat model, based on the USFWS Habitat Evaluation Procedures, has been used to provide baseline analysis for many Biological Assessments (BA) and Biological Opinions (BO) completed under the Endangered Species Act (ESA). Dr. Brack’s publications on endangered bats number well into the hundreds and include professional scientific journal articles, book sections. He is co-author of *Bats of Ohio*, *Bats of Indiana*, and “Bats of Camp Dawson, West Virginia: Relative Abundance, Habitat Use, and Periods of Activity”.

2.1.2 Dr. Dale Sparks – Senior Project Manager

Dr. Sparks is also a Certified Wildlife Biologist and a Certified Senior Ecologist. As ESI’s Senior Project Manager, he brings over 26 years of experience to the team. Many projects he manages concern federal and state listed bats within the central Appalachians of Virginia and West Virginia. His work also focuses on mitigation and conservation planning. He directed long term studies in support of a BA and Habitat Conservation Plan (HCP) which served as the first large-scale mitigation for loss of summer habitat for the Indiana bat. These studies also produced some of the most definitive research on the interaction of the Indiana bat and other bats with human developments, with many resulting publications bearing the name of Dr. Sparks.

In many respects, Dr. Sparks bridges the gap between more traditional wildlife biologists and ecological modelers. He champions the use of mathematical techniques to develop distribution models that assess the number of bats likely to occur in a given area, and thus, with other data, a way to extrapolate impacts at three regulatory scales (direct, indirect, and cumulative). His modeling is the primary source for the 3.8-million acre Pennsylvania Bats and Forestry HCP. In addition, Dr. Sparks serves as a technical advisor to USFWS for summer habitat conservation and population characteristics of the Indiana bat, and recently joined a USFWS group working to develop forest management practices for the northern long-eared bat. He is author or co-author of numerous papers, poster and oral presentations, book chapters, and books including *Bats of Kansas*, *Bats of Ohio* and *Bats of Indiana*.

2.1.3 Ms. Valerie Clarkston – Project Manager

Ms. Clarkston is a Certified Ecologist and regularly serves as both field supervisor and project manager for many of ESI’s endangered species surveys. Her expertise is in mammalogy, and she specializes in the capture, handling, and tracking of bats, rodents, and mesocarnivores. She is proficient with mist netting, radio telemetry,

habitat surveys, harp trapping, and acoustic monitoring and analysis for state and federally listed bat species. Ms. Clarkston is a resident of West Virginia and brings local experience to the project team.

Ms. Clarkston's project management experience includes directing multi-taxa surveys along the 301-mile Mountain Valley Pipeline, traversing 17 counties in Virginia and West Virginia and including portions of the Jefferson National Forest. She supervised mist netting at 372 sites totaling over 2100 net nights that yielded 1485 bats of 9 species, including 74 northern long-eared bats. Fifty-six northern long-eared bats were radio tagged, 43 were tracked to 68 roosts, and 267 bats were observed emerging from the roosts. She authors and coauthors numerous technical documents including multispecies BAs, Biological Evaluations (BEs), HCPs, and technical survey reports. Ms. Clarkston's DoD experience includes supervising and co-managing timber inventories, bat habitat assessments, mist net surveys, and radio telemetry at Camp Atterbury in Indiana in 2018.

2.1.4 Mr. Patrick Moore – Project Manager

Mr. Moore is a Certified Wildlife Biologist, technical scientist, and project manager with 10 years of experience in bat ecology and compliance monitoring. He is an expert on upland forest habitat and karst issues and spent the majority of his career working with bats in the Ozark and Boston Mountains regions of Arkansas and Oklahoma and in the Appalachian Plateau and Ridge and Valley regions of West Virginia and Virginia. In addition to over seven years of project management experience, Mr. Moore is an expert on bat acoustic analysis as well as aerial telemetry. His publications include an article in the 2017 Journal of Wildlife Management publication: *Habitat Use of Female Gray Bats Assessed using Aerial Telemetry*.

In 2018, Mr. Moore implemented a large-scale study at Camp Atterbury, Indiana, including aerial and ground-based foraging studies, mist-netting, acoustics, and diurnal roost tracking of 31 bats. Additionally, Mr. Moore serves a technical lead on projects at Fort Leonard Wood, Missouri for winter cave surveys and impacts of detonations on those populations. Before joining ESI, Mr. Moore gained extensive experience working on federal and state projects across the eastern U.S., including bat inventories on Fort Chaffee in Arkansas and the Anniston Army Depot in Alabama.

2.2 Field and Support Staff

With nearly 30 qualified biologists on staff (Table 1), ESI possess the capacity to complete this study in a timely, efficient manner. ESI typically staffs a project such as this with one or more two-person teams. Each team includes a Team Leader and a Biological Assistant. The Team Leader is a qualified biologist, trained to complete both acoustic and netting surveys. All Team leaders are WVDNR permitted to capture and handle Indiana and northern long-eared bats. A junior member of staff serves on the field team as Biological Assistant and provides safety and support for the Team Leader. Many Biological Assistants are accomplished and experienced biologists in their own

right—including meeting USFWS qualifications to complete acoustic surveys and conduct radio-telemetry. Resumes of representative field and support staff are provided in Appendix B.

Upon arrival at a sampling site, the Team Leader selects the specific location and orientation for bat detectors and/or mist nets and completes an assessment of habitat at the site. During acoustic surveys, detectors are typically serviced each day and acoustic data are regularly downloaded, analyzed using a USFWS approved acoustic bat ID program, and visually reviewed by an in-house, recognized acoustic expert.

Mist netting is implemented as soon as possible upon positive identification of calls recorded that are consistent with Indiana or northern long-eared bat. Team Leaders ensure captured bats are properly removed from the net and all appropriate data are collected, including identification to species, body measurements, and white-nose syndrome damage assessment. Upon completion of survey efforts, Team Leaders coordinate with ESI's senior staff to ensure that data are accurately and completely recorded for each site.

3.0 Experience

3.1 Experience in West Virginia and Central Appalachians

Since its inception, nearly 19 years ago, ESI has continuously completed an assortment of projects in West Virginia including over 60 bat-related projects comprising 3500 net nights of effort over the last five years. Most of these projects involve acoustic monitoring in combination with mist netting. ESI's work in West Virginia encompasses a substantial portion of the state, thus we operate a centrally located and dedicated West Virginia office and continue providing high quality environmental services in the state.

3.2 Experience on DoD Facilities

ESI's project experience on multiple DoD facilities includes habitat assessments, timber inventories, mist netting, homing telemetry, foraging telemetry (ground and aerial), and acoustic surveys (Table 2). Projects were completed for the U.S. Army, U.S. Air Force, and National Guard at 14 facilities including two separate surveys at Camp Dawson in 2002 and 2006. Additionally, we hold a five-year Indefinite Delivery Indefinite Quantity contract with the U.S. Army Corps of Engineers Rock Island District for natural resource investigations, including bat surveys, in the Upper Mississippi River Basin. We understand the constraints associated with completing natural resources studies on a facility with a dedicated military mission, as well as working on facilities training personnel for a variety of combat situations. Select project abstracts are provided in Appendix C.

Table 2. Projects Managed by ESI for DoD

DoD Facility	Branch	Location	Activity	Year
Camp Atterbury	National Guard	IN	Mist Netting, Acoustics, Telemetry	2018
Camp Atterbury	National Guard	IN	Timber Inventory, Habitat Assessment	2017-2018
Fort Campbell	U.S. Army	KY, TN	Mist Netting, Acoustics, Telemetry	2017
Fort Leonard Wood	U.S. Army	MO	Mist Netting, Acoustics, Telemetry; Biological Assessment	2016, 2017
Fort Leavenworth	U.S. Army	KS	Mist Netting and Acoustics	2016, 2017
Camp Ashland	National Guard	NE	Acoustic Analysis	2015, 2016
Camp Ashland MEAD	National Guard	NE	Acoustic Analysis	2015, 2016
Camp Greenlief	National Guard	NE	Acoustic Analysis	2015, 2016
Camp Silver Creek	National Guard	NE	Acoustic Analysis	2015, 2016
Fort Leonard Wood	U.S. Army	MO	Habitat Assessment	2015
Patrick Air Force Base	U.S. Air Force	FL	Acoustics	2013
Fort Drum	U.S. Army	NY	Mist Netting	2007, 2009-2010
Wright-Patterson	U.S. Air Force	OH	Habitat Assessment	2006
Camp Dawson	National Guard	WV	Mist Netting	2006
Camp Ravenna	National Guard	OH	Mist Netting	2004
Camp Dawson	National Guard	WV	Mist Netting	2002, 2006
Fort McClellan	National Guard	AL	Mist Netting	2002

4.0 Proposed Scope of Work

4.1 Field Survey

To meet objectives for the critical fauna survey for Indiana and northern long-eared bats, ESI proposes a combination of survey techniques based on the 2018 Range-Wide Indiana Bat Summer Survey Guidelines.

4.1.1 Phase 1 – Initial Project Screening

ESI drafts and submits a Study Plan to the USFWS and WVDNR. The Study Plan outlines the proposed survey methods, identifies potentially suitable habitat through a desktop assessment, and determines level of effort for the project. Additionally, submittal and approval of the Study Plan is a condition of our permits. The Study Plan is not submitted without prior approval from the WVARNG.

4.1.2 Phase 2 – Presence / Absence Surveys

USFWS guidelines allow completion of presence/absence surveys via placing either mist nets or bat detectors (i.e., an acoustic survey) throughout an area. ESI recommends the use of acoustic surveys for Camp Dawson. The required level of effort is determined by the amount of suitable habitat equal to two sampling units (8 detector nights) for each 123 acres of forest.

A previous RFQ from 2016 indicated that Camp Dawson contains approximately 2,955.84 acres (ac) of forest, distributed as follows: Pringle Tract, 1,459.16 ac.; Briery Tract, 1,150.10 ac; Volkstone Tract, 346.58 ac. Thus, Camp Dawson comprises 24 units of suitable habitat. Completing acoustic surveys at 48 stations (yielding 192 detector nights of effort) appears the most cost-effective means to sample suitable habitat at Camp Dawson.

Acoustic survey efforts for larger projects are completed using a combination of field and office staff. Field staff place, monitor, and remove bat detectors containing stored electronic data (recorded bat calls). Data are downloaded to a laptop computer in the field, and remotely provided for access by technical staff in the office. Office staff process bat calls through a USFWS-approved program that provides a preliminary identification for each call file. Unfortunately, the calls of many bats are similar enough to easily fool the software. A visual review and final determination are rendered by a qualified ESI biologist, accepted and approved by USFWS.

The cooperative field/office effort enables ESI to quickly recognize and distinguish among cases when 1) software erroneously detects protected bats, 2) protected bats are clearly present, and 3) acoustic survey results are ambiguous and immediately determine whether implementation of Phase 3 of the guidelines is warranted. Because bats change foraging and commuting areas over time, rapid implementation of Phase 3 affords an improved opportunity to catch the protected bat if it is present.

4.1.3 Phase 3 – Conduct Mist-Netting Surveys to Capture Indiana Bats

Based on our experience working in the region, ESI anticipates calls consistent with northern long-eared and Indiana bats will be detected within 75 percent (18 of the 24 sampling units). As such, ESI will complete a minimum of 72 additional net nights near the 18 sites to capture and radio-tag Indiana and northern long-eared bats.

4.1.4 Phase 4 – Conduct Radio-tracking and Emergence Surveys

Capture records from the 2016 Camp Dawson report indicate 3 northern long-eared and 0 Indiana bats were captured. For this quote, ESI estimates a similar rate of capture and anticipates radio-tagging and tracking up to three captured bats for up to seven days each. Tags are placed on captured Indiana and northern long-eared bats with priorities focused on reproductive females and tagging at least one bat per tract. Diurnal radio-telemetry searches for roosts are conducted until the roost is located or for a minimum of four hours of ground-searching per day. When a roost tree is found,

it is flagged and an emergence count is conducted for at least two nights. Emergence counts begin before dusk and continue until all bats have left the tree.

4.2 Report

By 15 September 2019 and following completion of field surveys, ESI will provide two hard copies and one electronic copy of a draft report for review including detailed methods, survey results, and site observations. Life histories and ecology for both species, management strategies and actions, and a review of available data sources are also included. Data gaps are identified and any consultation and coordination pertaining to the project is determined.

Upon WVARNG review and comment on the draft document, ESI will finalize and submit three hard copies and one electronic copy of the final report to the WVARNG by 15 October 2019.

5.0 Cost and Assumptions

5.1 Costs

ESI proposes a budget of **\$64,100.00** for this project as detailed in Appendix A. This cost includes the following items:

- Completion of Study Plan for submittal to the USFWS and WVDNR;
- Completion of 192 detector nights at 48 stations to cover 24 sampling units of habitat based on current USFWS guidelines
- Acoustic analysis using USFWS approved software
- Expert visual review;
- Completion of 18 mist-net sites across the three tracts on Camp Dawson;
- Radio-telemetry and emergence counts for up to three captured Indiana and/or northern long-eared bats;
- Completion of Draft and Final Survey Report.

ESI believes this is the most thorough and efficient strategy for meeting the WVARNG's goal for this project.

5.2 Assumptions

5.2.1 Acoustic Surveys

The level of effort for acoustic surveys follows 2018 USFWS Guidelines. Based on acreages provided in the 2013 Camp Dawson report, ESI estimates 24, 18, and 6

acoustic stations will be completed at the Pringle, Briery, and Volkstone Tracts, respectively. Each station comprises a minimum of 2 detectors, sampled for 2 nights during acceptable weather yielding a total sampling effort of 192 detector nights.

5.2.2 Mist-Netting

Current USFWS guidelines do not specify a level of effort needed to follow positive acoustic detections. ESI plans to cap this level of effort based on the predicted detection of protected bats in 75 percent of the sampling units, and one field night (minimum of four nets per site) of sampling at each of the resulting 18 sites.

5.2.3 Telemetry of Captured Bats

ESI will radio-tag and track up to three captured Indiana and/or northern long-eared bats for up to seven days. Additional captured bats may be tagged and tracked at the discretion of the WVARNG for an additional fee.

6.0 Addenda

In fulfillment of the Request for Quote, the following items can be found in Appendix D: Certification and Signature Page, Addendum Acknowledgement Form, and Purchasing Affidavit.

7.0 Contacts at ESI

ESI appreciates the opportunity to propose on this project. Please do not hesitate to contact us if you have any questions. All communications should be directed to:

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**APPENDIX A
PRICING PAGE**



EXHIBIT A
Pricing Page

ALL LABOR, MATERIALS, EQUIPMENT, AND SUPPLIES NECESSARY TO CONDUCT CRITICAL FAUNA SURVEY FOR THE INDIANA BAT AND NORTHERN LONG-EARED BAT, ON CAMP DAWSON ARMY TRAINING SITE AT KINGWOOD, WV

The undersigned, hereafter called the Bidder, being familiar with and understanding the bidding documents; and being familiar with the required qualifications and the mandatory requirements of the Project with regards to the deliverables and associated timelines, hereby proposes to furnish labor, material, equipment, supplies, and transportation to perform the work as described in the bidding documents

BIDDERS COMPANY NAME: Environmental Solutions & Innovations, Inc.

VENDOR ADDRESS: 4525 Este Avenue
Cincinnati, OH 45232

TELEPHONE: (513) 451-1777

FAX NUMBER: (513) 451-3321

E-MAIL ADDRESS: dmcneill@envsi.com


TOTAL BID AMOUNT:

Sixty Four Thousand One Hundred Dollars and Zero Cents

(\$ 64,100.00)

(Contract bid to be written in words and numbers.)

Failure to use this bid form may result in bid disqualification.

SIGNATURE:  DATE: 25 February 2019

NAME: Douglas McNeill
(Please Print)

TITLE: Marketing Manager

**APPENDIX B
RESUMES**



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Virgil W. Brack, Jr, Ph.D.

CEO & Principal Scientist

4525 Este Avenue

Cincinnati, OH 45232

513-451-1777



EDUCATION

Ph.D., Wildlife Ecology, Purdue University, 1983

M.S., Physiological Ecology, University of Missouri - 1979

B.S., Wildlife Sciences, University of Missouri - 1975

MBA, Xavier University, 1998

PROFESSIONAL CERTIFICATIONS

Certified Wildlife Biologist: The Wildlife Society

Certified Senior Ecologist: Ecological Society of America

INDOT & FHWA: NEPA and the Transportation Decision Making Process, NEPA Categorical Exclusions

ODOT: Ecological Training, Section 4(f)/6(f) Training, NEPA Process Training, Categorical Exclusion Training

EUCI/IACET: MBTA for Oil & Gas Companies

USFWS: Habitat Conservation Planning for Endangered Species

USEPA/CSU Advanced and Emerging Techniques for Improving NEPA Assessment

GSA: Federal Projects and Historic Preservation Law 106 Compliance

USFWS /CLE International: The Endangered Species Act

USFWS: Habitat Evaluation Procedures

FHWA: Wetland Delineation and Functional Value Assessment

QUALIFICATIONS AND EXPERIENCE

Dr. Brack is Environmental Solutions & Innovations CEO and Principal Scientist. Over the course of his 35-year career, he played the role of Project Principal, Project Manager, or Scientist on hundreds of projects completed under the National Environmental Policy Act (NEPA). He managed, directed, and participated in large, multidisciplinary Environmental Impact Statements (EIS), smaller Environmental Assessments (EA), and simple Categorical Exclusions (CE). His broad NEPA experience allowed him to assist a variety of lead agencies, such as the Federal Energy Regulatory Commission (FERC), state Departments of Transportation (DOTs) and the Federal Highway Administration (FHWA), Federal Aviation Administration (FAA), U.S. Army Corps of Engineers (USACE) and the Department of Defense (DoD), U.S. Fish and Wildlife Service (USFWS), and the U.S. Forest Service (USFS).

PROJECTS

American Electric Power, Multi-species HCP

Ohio, Kentucky, Indiana, Michigan, West Virginia, Virginia, Tennessee, Arkansas, Oklahoma, Texas, Louisiana *Technical Advisor*

Comprehensive HCP covering multiple business activities for consistent, coordinated, and cost-effective application of conservation metrics. This is the nation's largest multi-species HCP addressing the conservation needs of over 300 threatened and endangered species associated with over 40,000 miles of right-of-way and 188 million acres of land.

Pennsylvania Game Commission and Pennsylvania Department of Conservation and Natural Resources, Pennsylvania State Lands Bat and Forestry HCP

Pennsylvania *Principal Scientist*

Environmental Setting and Biological Resources portion of HCP for federally listed bats to permit activities related to forest management on 3.8 million acres of state lands.

Indiana Department of Natural Resources Division of Forestry, Multi-species Habitat Conservation Plan (HCP)/EIS

Indiana *Principal Scientist*

Combined HCP/EIS for proposed forestry resource management actions on 150,000 acres of state managed lands. Major focus of project was demonstrating compatibility of forest management goals with concurrent goals for habitat enhancement and conservation for federally listed Indiana bat. The project was a pioneering effort and the first of its kind in Indiana.

USFS, Hoosier National Forest German Ridge Restoration

Indiana *Principal Scientist*

DEIS/FEIS for German Ridge Restoration Management Plan. Major concerns included management for threatened, endangered, and forest sensitive species; harvest of wind-damaged timber; and use of fire as a management tool.



American Electric Power, Wyoming-Jacksons Ferry 765kv Transmission Line

Virginia and West Virginia

Principal Scientist

Support for 90-mile power line EIS. In addition, responsible for endangered species surveys, multi-species Biological Assessment (BA; Indiana bat, Virginia big-eared bat, bald eagle, and four species of plants), and Biological Evaluation (BE) for Forest Sensitive Species where project crossed Jefferson National Forest.

Ohio DOT, Route 33 Nelsonville Bypass

Ohio

Principal Scientist

Field studies, including three years of presence/absence summer mist net and habitat suitability surveys for endangered Indiana bats; senior author of multi-species BA and three BEs for Forest Sensitive Species where project crossed Wayne National Forest; and contributor to endangered species and ecological resource sections of project EIS.

USFS Huron-Manistee National Forest

Michigan

Principal Scientist

Multi-species Programmatic BA for the Forest Service Management Plan. Species considered included listed, candidate, and petitioned species: Indiana bat, piping plover and its Critical Habitat, cerulean warbler, Massasauga rattlesnake, Karner blue butterfly, American burying beetle, Hungerford's water beetle, and three species of plants.

Indiana DOT, Interstate 69 Expansion

Indiana

Principal Scientist

Tier 1 and 2 multi-species (bats, mussels, birds, fish, herps, and plants) field studies and ESA reporting for preconstruction impact assessment, and post-construction conservation monitoring compliance efforts and bat responses to highway development.

Kentucky Transportation Cabinet, Ohio River Bridge Crossing

Kentucky

Principal Scientist

Environmental studies in support of EA for approaches to and bridging of the Ohio River at Maysville. This multidimensional project involved a wide array of studies, including wetlands, endangered species, and aquatic and terrestrial ecology.

Delaware DOT, US Route 13 Relief Route: Route 7 to US Route 113

Delaware

Principal Scientist

Field surveys and EIS NEPA documentation for impacts to over 400 wetlands and 143 stream crossings along 150 miles of highway corridor. Completed detailed evaluations of over 70 wetlands and participated in wetlands reporting and in field studies conducted at 77-water quality/fish and 45-benthic invertebrate sampling stations.

PUBLICATIONS

Brack, V., Jr., and D. W. Sparks. In prep. Efficacy of Upland Pond and Boxes at a Local Scale to Mitigate Impacts to Summer Habitat of Rare Bats in Eastern Deciduous Forests. In Prep for Journal of Fish and Wildlife Management.

Brack, V., Jr., J. O. Whitaker, Jr., and S. Pruitt. 2004. Bats of Hoosier National Forest. Proceedings of the Indiana Academy of Science 113:76-86.

3D/Environmental. 1995. Literature summary and habitat suitability index model. Components of summer habitat for the Indiana bat, *Myotis sodalis*. Authors: R. C. Romme, K. Tyrell, V. Brack, Jr. Report submitted to the Indiana Department of Natural Resources, Division of Wildlife, Bloomington, Indiana by 3D/Environmental, Cincinnati, Ohio. Federal Aid Project E-1-7, Study No. 8, 38 pp.



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Dale W. Sparks, Ph.D.

Senior Project Manager

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513-451-1777



EDUCATION

Ph.D., Biology, Indiana State University, 2003

M.S., Biology, Fort Hays State University, 1996

B.S., Biology, Murray State University, 1993

PROFESSIONAL CERTIFICATIONS

Certified Wildlife Biologist: The Wildlife Society

Certified Senior Ecologist: Ecological Society of America

Qualified Indiana Bat Surveyor: Commonwealth of Pennsylvania

PROFESSIONAL AFFILIATIONS

American Society of Mammalogists, Life Member

The Wildlife Society

Society for Conservation Biology

Southwestern Association of Naturalists

QUALIFICATIONS AND EXPERIENCE

Dr. Sparks is a Certified Senior Ecologist and a Certified Wildlife Biologist with 26 years of experience researching wildlife at the urban-rural interface. Many of Dr. Sparks' projects concern federally endangered Indiana bats (*Myotis sodalis*) and the federally threatened northern long-eared bat (*M. septentrionalis*). He directed long-term studies in support of a Biological Assessment (BA) and Habitat Conservation Plan (HCP) associated with developments at the Indianapolis International Airport and the near-by Six-Points highway project, respectively. Studies included mist-net, acoustic monitoring, population estimates using both emergence counts and DNA-based approaches, and radio telemetry studies, requiring close coordination with state, federal, and local agencies. These combined projects were the first large-scale mitigation for loss of summer habitat for the Indiana bat and have produced some of the most definitive research on the interaction of the Indiana bat with human developments.

In many respects, Dr. Sparks bridges the gap between more traditional wildlife biologists and ecological modelers. He champions the use of mathematical techniques to develop distribution models that assess the number of bats likely to occur in a given area, and thus, with other data, a way to extrapolate impacts at three regulatory scales (direct, indirect, and cumulative). His modeling is the foundation of the 3.8-million acre Pennsylvania Bats and Forestry HCP, the Environmental Impact Statement (EIS) for the Midwest Energy Multi-species HCP, Lake States Forest Management HCP, American Electric Power Multi-state Multi-species HCP, and the Missouri Department of Conservation HCP.

PROJECTS

American Electric Power, HCP

Ohio, Kentucky, Indiana, Michigan, West Virginia, Virginia, Tennessee, Arkansas, Oklahoma, Texas, Louisiana

Technical Lead, Protected Species

HCP designed to allow electrical utility to meet ESA compliance for multiple species for new construction and line rebuild activities. This is the nation's largest multi-species HCP addressing the conservation needs of over 300 threatened and endangered species associated with over 40,000 miles of right-of-way and 188 million acres of land. Responsible for developing take estimates and mitigation planning for covered species.

Atlantic Coast Pipeline

Virginia, West Virginia, and North Carolina

Species Lead

Habitat assessment for state-listed southeastern bats and eastern subspecies of Rafinesque's big-eared bat along portions of approximately 564-mile interstate natural gas pipeline system. Studies consisted of desktop analysis, field verification, and exploratory mist-net surveys at four sites. No southeastern *Myotis* or Rafinesque's big-eared bats were captured, but 30 – 40 were observed roosting under a highway bridge within the survey corridor.



Pennsylvania Game Commission, Pennsylvania State Lands Bat and Forestry HCP

Pennsylvania

Lead Technical Scientist

Identified and quantified projected management activities over the next 30 years that might impact bats and developed distribution models to assess number of bats likely to occur in an area and a way to extrapolate impacts on three regulatory scales - direct, indirect, and cumulative.

Lake States, Forest Management HCP

Minnesota, Wisconsin, and Michigan

Lead Technical Scientist

HCP designed to allow forest management in the presence of four bat species impacted by White Nose Syndrome. Responsible for developing landscape-level models to determine how these species are impacted by forest management practices.

Missouri Department of Conservation, HCP

Missouri

Lead Technical Scientist

HCP designed to allow habitat management in the presence of five bat species impacted by White Nose Syndrome (Indiana, gray, northern long-eared, little brown, and tri-colored bats). Responsible for developing landscape-level models of bats and how these species are impacted by habitat management practices on lands throughout Missouri.

Ohio Department of Transportation, Sunday River Mitigation Site

Ohio

Lead Technical Scientist

Evaluation of existing stream mitigation site to provide suitable mitigation for the endangered Indiana bat. Provided analysis of best available science which included confidential distributional data maintained by the U.S. Forest Service and the Ohio Department of Natural Resources, publicly available mine maps, field surveys to locate and observe bat activity at mine openings, as well as evaluation of extensive acoustic monitoring.

Midwest Energy, Multi-species HCP EIS

Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin

Lead Technical Scientist

EIS to evaluate impacts of developing more than 51,000 megawatts of wind energy across an eight-state region on three species of bats covered by the HCP, as well as all other bats in the region. Evaluation included development of models to estimate mortality of bats and to compare four alternatives. Further managed biologists responsible for completing similar analyses for aquatic macroinvertebrates and surface waters.

Oil and Gas Coalition, Multi-state HCP EIS

Ohio, Pennsylvania, and West Virginia

Protected Species Lead

Evaluating impacts to biological resources and developing biological sections of USFWS third-party EIS for HCP being developed for five bat species in support of a 50-year incidental take permit.

American Electric Power, Wyoming-Jacksons Ferry 765kv Transmission Line

Virginia and West Virginia

Project Manager (Long-term Monitoring)

Support for 90-mile power line EIS. In addition, responsible for endangered species surveys, multi-species BA (Indiana bat, Virginia big-eared bat, bald eagle, and four species of plants), and Biological Evaluation for Forest Sensitive Species where project crossed Jefferson National Forest.

Indiana DOT, Interstate 69 Expansion

Indiana

Project Manager (Long-term Monitoring)

Tier 1 and 2 multi-species (bats, mussels, birds, fish, herps, and plants) field studies and ESA reporting for preconstruction impact assessment, and post-construction conservation monitoring compliance efforts and bat responses to highway development.



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Valerie J. Clarkston

Project Manager

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EDUCATION

M.S., Wildlife Science, Purdue University, 2011

B.S., Wildlife Science, Purdue University, 2008

PROFESSIONAL CERTIFICATIONS

Certified Ecologist: Ecological Society of America

Ecological Training, Ohio Department of Transportation

Qualified Indiana Bat Surveyor: Commonwealth of Pennsylvania

Interagency Consultation for Endangered Species: U.S. Department of Interior

Introduction to Acoustic Monitoring Studies: Bat Call Identification Inc.

Chemical Immobilization of Animals: Safe Capture International, Inc.

PROFESSIONAL AFFILIATIONS

Ecological Society of America

The Wildlife Society

The American Society of Mammalogists

The Audubon Society

The Nature Conservancy

Midwest, Northeast, and Southeast Bat Working Groups

QUALIFICATIONS AND EXPERIENCE

Since 2007, Ms. Clarkston participated in and supervised over 100 studies associated with terrestrial wildlife projects and research extending from the eastern seaboard to the extreme northwestern (Alaska) U.S. Her ecological studies are primarily focused on bat species including Indiana (*Myotis sodalis*) and northern long-eared (*M. septentrionalis*) bats. Her extensive field experience includes habitat assessments, roost tree identification, artificial roost installation, emergence counts, mist netting and harp trapping, acoustic surveys, morphometric data collection, and radio telemetry. She is also familiar with the taxonomy and ecology of many terrestrial herbaceous plants and trees. Her Master’s thesis: “Small Mammal Response to Oak Savanna Restoration” involved live-trapping small mammals both before and after restoration in an effort to determine effects of forest disturbance on habitat and animal abundance. Ms. Clarkston authors and edits technical reports including data analysis and modeling. She has also prepared and presented research papers to scientific professional societies.

PROJECTS

Indiana National Guard, Camp Atterbury Himsel Airfield Expansion

Indiana *Project Manager/Field Supervisor*

Full timber inventory, bat habitat assessment, analysis, and reporting for the DoD installation encompassing approximately 1,673.91 acres in Johnson County. Assisted in the 2018 capture and radio telemetry effort of approximately 30 Indiana and northern long-eared bats.

EQT, Mountain Valley Pipeline

West Virginia and Virginia *Assistant Project Manager/Field Supervisor*

Surveys for multiple terrestrial and aquatic species along 301-mile interstate natural gas pipeline crossing 17 counties and portions of Jefferson National Forest. Efforts included aerial surveys for bald eagles and associated nests; mist net surveys for federally listed bats, and tree stand inventory. Authored and co-authored documents including FERC resource reports, Biological Assessment, and multi-taxa survey reports.

EQT, Southgate Natural Gas Pipeline

North Carolina and Virginia *Field Supervisor*

Mist net surveys for listed bat species along an approximate 73-mile natural gas pipeline in Pittsylvania County, Virginia and Alamance and Rockingham counties, North Carolina.

American Electric Power, Bland Area Improvements

West Virginia and Virginia *Field Supervisor*

Mist netting and radio-telemetry for endangered bat species along 138kV transmission line rebuild crossing U.S. Forest lands. Captured and radio-tagged one federally threatened northern long-eared bat. Also completed surveys for migratory songbirds and nests.



EQT, Multiple Well Pads

West Virginia

Assistant Project Manager/Field Supervisor

Desktop analysis and on-site assessments for endangered bat summer and winter habitat to determine suitability as *Myotis* bat mitigation sites. Evaluation of each parcel included assessment of multiple factors considered desirable for *Myotis* bat species, as well as constructability factors. Additionally, drafted *Indiana Bat Conservation Plans*.

Columbia Gas Transmission, WB XPress Pipeline

West Virginia

Field Supervisor

Small mammal live-trapping, camera scent station surveys, and acoustic bat detector surveys at suitable rock outcrop features on Monongahela National Forest in Pendleton County. Target species included eastern small-footed bat, eastern spotted skunk, Allegheny woodrat, southern rock vole, and southern water shrew. Completed data analysis and authored technical report

American Electric Power, Multiple Transmission Lines

West Virginia

Field Supervisor

Summer mist netting for endangered bat species along approximately 88.5 miles of uphill widening in Boone, Logan, McDowell, Raleigh, and Wyoming counties

EQT, Ohio Valley Connector Pipeline

West Virginia

Team Leader

Summer mist netting and fall harp trapping for endangered bats in Marshall and Wetzel counties. Captured and identified 58 northern long-eared bats. Completed diurnal radio-telemetry and roost emergence count studies.

Consol Pennsylvania Coal Company, Bailey Mine

Pennsylvania

Team Leader

Summer mist net and radio-telemetry surveys in support of ongoing monitoring for federally endangered Indiana bat maternity colony in Greene County. Captured, identified, and completed diurnal and foraging telemetry on 4 federally endangered Indiana bats. Authored multiple end of year technical reports involving high level data analysis (telemetry data analysis, home range calculations [minimum convex polygons, etc.], and habitat/foraging correlations).

Pennsylvania Turnpike Commission, Southern Beltway, Interstate 79 to US Route 22

Pennsylvania

Biologist

Summer mist net and radio-telemetry surveys for endangered bats along approximately 12 miles of proposed roadway in Washington and Allegheny counties. Captured and completed radio-telemetry on one northern long-eared bat.

USFWS, Ozark Plateau National Wildlife Refuge

Oklahoma

Team Leader / Biologist

Harp trapping and mist netting at three cave entrances within Ozark Plateau National Wildlife Refuge. Captured and identified federally endangered gray bats, federally threatened northern long-eared bats, and federally endangered Ozark big-eared bats over two nights of sampling.

Ohio Department of Natural Resources, Bat Inventory

Ohio

Biologist

Inventory of hibernating bats in Lewisburg Mine. The mine is currently distinguished as a Priority 2 and the largest Indiana bat hibernaculum in Ohio. Identified and counted several hundred to a thousand bats of 5 species, including the Indiana bat; documented White Nose Syndrome; recorded microclimate data for a large portion of the mine; and completed technical report.



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Patrick R. Moore

Project Manager

3851 S. Jefferson Avenue

Springfield, MO 65807

417-708-5995



EDUCATION

M.S., Biology - Master of Science, Biology Arkansas State University, 2016

B.S., Biology, Wildlife Ecology and Management. Arkansas State University, 2010

PROFESSIONAL CERTIFICATIONS

Bat Sense (bat call acoustic analysis training)

PROFESSIONAL AFFILIATIONS

The Wildlife Society

Bat Conservation International

Southeastern Bat Diversity Network

Civil Air Patrol

QUALIFICATIONS AND EXPERIENCE

Mr. Moore is a wildlife biologist specializing in large, complex projects. For nearly ten years, he worked in the Arkansas Ozark and Boston Mountain regions performing all aspects of bat surveys on the Ozark-St. Francis National Forest, Arkansas Game and Fish Commission Wildlife Management Areas, Arkansas Department of Transportation right-of-way projects, and private lands. In addition, he performed winter hibernacula and summer maternity counts in Arkansas for five years, including all threatened and endangered bat caves and numerous low-use caves.

Mr. Moore began performing aerial telemetry studies in 2012. While an Arkansas State University (ASU) graduate student, he completed aerial tracking of 112 female gray bats foraging in the White River and Illinois River watersheds. His efforts were subsequently published in the *Journal of Wildlife Management* in 2017. He also conducted aerial tracking of 18 male gray bats foraging on the White River watershed. Based on extensive literature review and field experience, he developed and implemented analysis methods for the project, including quantification of location error and analysis of foraging areas. In cooperation with the Ozark-St. Francis National Forest and various other partners, he supervised and implemented an Indiana bat aerial migration study with ASU. He developed an understanding of emergence timing, migratory pathways, length of stay at stopover roosts, and preferred areas of use throughout Arkansas. His efforts included close coordination with various agencies as well as Arkansas Game and Fish Commission’s contract pilot. In addition to aerial methods, he developed protocol and analysis methods for ground telemetry foraging studies.

PROJECTS

Indiana Army National Guard, Camp Atterbury Himsel Airfield Project
Indiana *Biologist*

Ground-based foraging and aerial tracking study quantifying habitat use, home range, and core-foraging areas of 26 Indiana and 5 northern long-eared bats.

West Virginia Division of Highways / Federal Highway Administration
West Virginia *Biologist*

Ground-based foraging telemetry study on Virginia big-eared bats. Responsibilities included developing home range and core-foraging polygons of radio-tagged bats, determining habitat use, and defining the use by bats of both a wind facility and roads.

Arkansas Highway and Transportation Department
Arkansas *Biologist*

Presence/probable absence surveys and bridge inspections for protected bat species throughout Arkansas. Also completed sandstone talus identification surveys to identify potential Ozark big-eared bat roosts.



Confidential Clients

Arkansas

Biologist

Indiana bats/bat population surveys in Ozark-St. Francis National Forest in Arkansas. Responsible for mist netting and acoustic surveys, radio-telemetry and aerial tracking of Indiana and gray bats, and banding migratory and cave bat species. Also completed spatial and statistical monitoring and agency coordination.

Arkansas State University

Arkansas and West Virginia

Biologist

Field supervisor for Indiana bats/bat population surveys in Ozark-St. Francis National Forest in Arkansas and in the State of West Virginia. Responsible for mist netting and acoustic surveys, foraging studies, radio-telemetry and aerial tracking of Indiana, gray and Virginia big-eared bats, banding migratory and cave bat species found in both states. Also conducted spatial modeling, made recommendations, and performed agency coordination.

Technical Lead for Indiana bat spring migration study completed via aerial and ground tracking. Conducted aerial tracking of migrating Indiana bats, managed project and field teams, and coordinated with U.S. Forest Service and U.S. Fish and Wildlife Service.

Completed aerial foraging studies of 130 foraging gray bats in Arkansas. Developed methods and implemented analysis of home range, core-foraging areas, and habitat-use. Study resulted in the publication "Habitat Use of Female Gray Bats Assessed using Aerial Telemetry" in the *Journal of Wildlife Management*.

Arkansas Game and Fish Commission

Arkansas

Co-Principal Investigator

Winter hibernacula and summer maternity counts throughout the state. Project included monitoring 60-160 caves per year to obtain bat population counts in all known threatened and endangered bat caves. Population monitoring / White Nose Syndrome surveys conducted on other lower use caves.

U.S. Forest Service

Arkansas

Field Assistant

Assisted with graduate student thesis research at Rossen Hollow in the Boston Mountain District of the Ozark-St. Francis National Forest. Assisted with capture and radio transmitter attachment to nine male Indiana bats, mapping, vegetation plots, and tracking Indiana bats to roost trees within the capture area. In addition captured and banded Ozark big eared bats for tracking and special DNA analysis at Oklahoma State University (22 total). Filtered and banded all other species and collected samples from bats potentially affected by White Nose Syndrome.

PUBLICATIONS AND PRESENTATIONS

Moore, P. R., T. S. Risch, D. K. Morris, and L. B. McNew. 2017. Habitat use of female gray bats assessed using aerial telemetry. *Journal of Wildlife Management* 81:1242-1253.

Sasse, D.B., T.S. Risch, D.A. Saugey, M.J. Harvey, J.D. Wilhide, R.K. Redman, J.J. Jackson, T. Klotz, and P.R. Moore. 2013. New Records of the Eastern Small-footed bat (*Myotis leibii*) in Arkansas. *Journal of the Arkansas Academy of Science* 67: 214-216.

Sasse, D.B., M.L. Caviness, M.J. Harvey, J.J. Jackson, T. Klotz, P.R. Moore, R.W. Perry, R.K. Redman, T.S. Risch, D.A. Saugey, and J.D. Wilhide. 2014. New records and notes on the ecology of the northern long-eared bat (*Myotis septentrionalis*) in Arkansas *Journal of the Arkansas Academy of Science* 68: 170-173.



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Phillip Lee Arant

Biologist

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EDUCATION

M.S., Forestry and Natural Resources, University of Kentucky, in progress

B.S., Biology, University of Southern Indiana, 2012

PROFESSIONAL CERTIFICATIONS

Swamp School Wetland Delineation Training for Northeastern Wetland Regions

Acoustic Survey Methods Course by John Chenger and Janet Tyburec of Bat Survey Solutions, LLC.

QUALIFICATIONS AND EXPERIENCE

Mr. Arant is an ecologist and a federally permitted bat biologist who has completed numerous presence/absence surveys, summer habitat surveys, and winter population surveys for listed bat species. His thesis work examined the impact of forest harvests on bat and insect communities in Eastern Kentucky. Light traps were used to sample the insect communities, and the bat population was sampled using a combination of acoustic and mist netting techniques. Federally endangered bats, *Myotis septentrionalis* and *Myotis sodalis*, were radio-tagged and tracked to summer roosts.

Mr. Arant's experience includes backpack electroshocking and seining surveys for fish species in the Blue River drainage (Indiana), wetland delineations, invasive plant species removal, and habitat restoration projects for plants (including the listed Braun's rockcress). His field work and studies also encompass bird banding, small mammal trapping, and snorkeling for hellbenders and endangered fish. Prior to working in the field, he spent several years working in a laboratory setting as a general laboratory technician working on researching involving microbiology, metrology, and protein analysis.

PROJECTS

Confidential Client, Roadway Expansion

West Virginia

Team Leader

Mist net surveys in Wayne County. Located suitable mist net locations along sections of the linear mist net project and communicated with land owners about access and survey details.

Confidential Client, Well Pads and Pipelines

West Virginia

Team Leader

Monitoring and netting of bat boxes to evaluate use. Banded and collected data on captured endangered bats roosting within boxes.

Confidential Client, Conservation Properties

West Virginia

Team Leader

Mist net surveys in Grant County. Processed captured bats.

Confidential Client, Conservation Area

Pennsylvania

Team Leader

Mist net surveys supporting the creation of a habitat conservation area for *Myotis* in Bedford County.

Confidential Clients, Well Pads and Pipelines

West Virginia

Team Leader

Mist net surveys in Marshall Pleasants counties. Processed captured bats.



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Kyle R. Price

Biologist

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304-760-5803

EDUCATION

B.A., Wildlife Management,
West Virginia University, 2018

A.S., Fish Management and
Aquaculture Sciences, Hocking
College, 2015

QUALIFICATIONS AND EXPERIENCE

Mr. Price is a wildlife biologist engaged in a variety of terrestrial and aquatic studies encompassing bats, mussels, fish, arthropods, reptiles, rare plants, and wetlands throughout the midwestern and eastern United States. In 2018, he obtained a scientific collectors permit through the state of West Virginia to conduct biological monitoring of the eastern timber rattlesnake (*Crotalus horridus*) during construction activities of the Atlantic Coast Pipeline for which he handled and relocated specimens in danger of construction activities. His primary focus is bat species and is proficient in a variety of field study techniques including habitat assessments, portal/hibernaculum searches, mist netting, acoustic surveys, radio transmitter application, telemetry studies, and emergence counts.

PROJECTS

Dominion, Atlantic Coast Pipeline

North Carolina, Virginia, and West Virginia *Team Lead/Field Assistant*

Rattlesnake bio-monitoring for timber rattlesnakes, including daily visual sweeps and relocations of construction sites located in Pocahontas County along portions of proposed 564-mile natural gas pipeline. Documented habitat where individuals were found and relocated. Additional duties included acoustic and mist net surveys for listed bats.

American Electric Power, Bland Area Improvements

Virginia and West Virginia *Field Assistant*

Multi-taxa studies in support of a 23-mile electric transmission line rebuild in Bland and Wythe counties, Virginia and Mercer County, West Virginia. Tasks included bat habitat assessments, summer mist netting, and portal/hibernaculum searches. Additionally, assisted with rare and endangered arthropod searches in Jefferson National Forest.

EQT, Mountain Valley Pipeline

Virginia and West Virginia *Field Assistant*

Multi-taxa surveys along portions of a proposed 301-mile pipeline crossing 17 counties in West Virginia and Virginia. Duties included bat habitat assessments, summer mist netting, portal/hibernaculum searches, and pedestrian surveys for forest raptor species.

Fullstream Energy Holdings, Goff Connector

West Virginia *Field Assistant*

Habitat assessment for Indiana and northern long-eared bats along portions of the proposed 21-mile Goff Connector natural gas pipeline in Harrison County.

U.S. Fish and Wildlife Service, Foraging Study

Oklahoma *Field Assistant*

Mist net and harp trap surveys of three portal entrances as an ongoing four-year study during fall swarming periods for Ozark big-eared, northern long-eared, and gray bats at the Ozark Plateau National Wildlife Refuge.



Environmental Solutions & Innovations, Inc.

Real Science, Real Solutions

Tyler Remick

Biologist

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EDUCATION

M.S., Missouri State University,
Biology, in progress

B.S., Wildlife & Conservation
Biology, University of New
Hampshire, 2015

QUALIFICATIONS AND EXPERIENCE

Mr. Remick participates in a variety of terrestrial wildlife projects and research in the mid-western and eastern U.S. He completes surveys and assists with ecological studies for various species including Indiana, northern long-eared bat, Ozark big-eared bat, gray bat, southern flying squirrel, white-footed mice, Texas mice, voles, jumping mice, short-tailed shrews, and common loon among others. He also is familiar with the taxonomy and ecology of many trees and shrubs. His extensive field experience includes attaching radio-transmitters to Indiana bats and completing subsequent telemetry and emergence counts. Mr. Remick's many studies involving mammalogy and ornithology includes proficiency with: habitat suitability assessment; acoustic surveys; mist netting and harp trapping; collection of morphometric data; radio-transmitter attachment and telemetry; identification of small mammals and woody vegetation; use of Sherman live traps, pitfall arrays, mist nets and trail cameras; Geo-Spatial Software: ArcGIS and ArcView; and Statistical Software: R and Minitab.

PROJECTS

Department of Defense, Fort Leonard Wood

Missouri

Field Assistant

Acoustic monitoring, mist netting, and harp trapping within limits of the installation. Additionally, assisted with winter cave census counts in eight caves.

Indiana Army National Guard, Camp Atterbury Himsel Airfield Project

Indiana

Field Assistant

Timber survey of the installation in Johnson, Bartholomew, and Brown counties. Measured tree diameter at breast height, height, and took core samples for timber volume by plot and site index. Quantified forest structure via counting shrubs and invasive species.

EQT, Mountain Valley Pipeline

Virginia

Field Assistant

Acoustic monitoring at 11 portal openings along portion of 301-mile natural gas pipeline.

U.S. Fish and Wildlife Service, Ozark Plateau National Wildlife Refuge

Oklahoma

Field Assistant

Mist net and harp trap surveys of three portal entrances as an ongoing four-year study during fall swarming and spring emergence periods for Ozark big-eared, northern long-eared, and gray bats in Adair County. Processed and banded northern long-eared, gray, and tri-colored bats.

Ameren, Mark Twain Transmission Line

Missouri

Field Assistant

Mist net surveys to determine presence/probable absence of listed bat species. Completed morphometric processing and radio telemetry.

**APPENDIX C
ABSTRACTS**



THREATENED AND ENDANGERED BAT SURVEYS CAMP ATTERBURY, INDIANA

Client/Owner:	Camp Atterbury Joint Military Training Center
Owner	Indiana Army National Guard
Project Location:	Camp Atterbury, Johnson, Brown, and Bartholomew counties , Indiana
Period of Performance:	2017 - 2018
Contract Effort:	Mist Net, Acoustic, and Habitat Assessments
Reference:	Mr. Todd Eubank P.O. Box 5000, Building 241 Durbin Street Edinburgh, Indiana 46124 (812) 526-1499 Ext. 62241



ESI was retained by the Indiana Army National Guard (INARNG) to provide a detailed habitat evaluation and presence/absence survey for federally listed and resident bat species within the limits of a proposed airfield expansion project at Camp Atterbury (CAIN). The approximate 35,000-acre CAIN was established in 1942 as a military training and mobilization facility. Previous bat surveys on the installation conducted in 1997, 1998, 2002, 2005-2007, 2010, and 2016 documented presence of northern long-eared (*Myotis septentrionalis*) and Indiana bats (*Myotis sodalis*) during the summer maternity season.

Survey objectives included determining distribution and habitat use of the threatened northern long-eared, endangered Indiana, and any other protected bat species potentially present within a 3,783-acre survey area consisting of four alternative footprints for a proposed airfield expansion project. Data are used to evaluate impacts to foraging and roosting habitat of resident bats within each of the four proposed alternatives.

ESI conducted a detailed habitat evaluation from November 2017 to May 2018. To gather information regarding the forest's overall health, productivity, and ability to regenerate and provide continual and/or future habitat for bat species, ESI biologists conducted a timber inventory across 39 forested stands using 529 variable radius plots and collected silvicultural information on 3,738 trees. Eighty-seven unique roosting and foraging patches and 1,682 potential roost trees were documented within the survey area. Data collected during the habitat evaluation were used to determine subsequent acoustic and netting efforts.

ESI conducted acoustic and mist netting surveys from 12 to 26 June 2018. Seventy-six detector nights at 76 sites and 141 net nights at 36 sites were completed. Two hundred thirty-nine individual bats were captured, representing seven species including eight northern long-eared bats and 27 Indiana bats, and subsequently tracked to day roosts. Ground and aerial foraging telemetry was conducted on all radio-tagged bats to determine home range within survey area. Additionally, acoustic surveys identified call sequences from northern long-eared bats at 10 locations and Indiana bats at 25 locations.

Habitat, capture, and foraging data indicate a healthy bat population concentrated on the eastern half of the survey area. As such, development of the proposed airfield expansion project should focus on the western portion of the survey area to avoid impacting the higher quality habitat and existing maternity colonies of both Indiana and northern long-eared bats currently located within the eastern portion of the survey area.

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THREATENED AND ENDANGERED BAT SURVEYS FT. LEONARD WOOD, MISSOURI

Client/Owner:	Missouri State University
Owner	USACE Kansas City District
Project Location:	Fort Leonard Wood, Pulaski County, Missouri
Period of Performance:	2016 - Ongoing
Contract Effort:	Mist Net, Acoustic, and Portal Surveys
Reference:	Dr. Robert Pavlowsky 901 S. National Avenue Springfield, MO 65897 (417) 836-8473



ESI was retained by Missouri State University (MSU) on behalf of the U.S. Army Corps of Engineers (USACE) to provide an multi-year survey for federally listed and resident bat species within the installation limits. The installation comprises approximately 44,500 acres of forested habitat within the Ozarks Highlands region of Missouri and is designated an active Installation Management Command (IMCOM) facility. Previous bat surveys conducted from 1994 to 2010 documented the presence of northern long-eared (*Myotis septentrionalis*) and Indiana bats (*Myotis sodalis*) in summer and within eight hibernacula locations.

Survey objectives include determining presence, or presumed absence, of the threatened northern long-eared, endangered Indiana, and any other protected bat species potentially present via completion of a two-year comprehensive study. Data collected are used to evaluate military operations and sustainment / enhancement activities and develop installation-specific measures to protect listed species. Additionally, a Biological Assessment (BA) will be produced, outlining potential effects of military actions on the northern long-eared bat and will include any new information. The BA will include species life histories, distribution, current threats to the bat species, and determinations of adverse effects if any. The purpose of the BA is to develop site-specific conservation measures in accordance with Section 7 Consultation procedures of the Endangered Species Act (ESA).

ESI conducted acoustic and mist netting surveys from 15 May to 11 June and from 24 June to 18 July 2016. One hundred and eighty-four detector nights at 93 sites and 162 net nights at 21 sites were completed. Two hundred thirty-five individual bats were captured, representing eight species including 2 northern long-eared bats subsequently tracked to day roosts. Additionally, acoustic surveys identified call sequences from 11 northern long-eared bats at six sites. Fourteen Indiana bats were recorded at eight sites; however, none were captured during the survey. Seventy-two federally endangered gray bats (*Myotis grisescens*) were also captured and acoustically recorded throughout the area.

In 2017, ESI conducted a second round of acoustic and mist netting surveys. Three hundred fifty-five individual bats were captured representing seven species including the federally endangered gray bat, little brown, evening, big brown, eastern red, hoary, silver-haired, and tri-colored bats. Acoustic surveys were conducted at 39 cave entrances and these data were used to identify 10 caves for harp and mist net surveys. Bats were captured at eight cave entrances during spring and four entrances during fall. Captures included one northern long-eared bat and multiple gray, little brown, big brown, and tri-colored bats.

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FIELD SURVEYS ON CAMP DAWSON COLLECTIVE TRAINING FACILITY

Client / Owner:	State of West Virginia Army National Guard
Project Location:	Preston County, West Virginia
Period of Performance:	2002, 2006
Contract Effort:	Critical Fauna Surveys
Reference(s):	Mr. Ladd Williams Camp Dawson Environmental Office 240 Army Road, Building 414 Kingwood, WV 26537 (304) 791-4135



In 2002, ESI completed surveys for the federally endangered Indiana bat and federally threatened flat-spined three-toothed land snail. Based on exemplary performance on the project, ESI was retained to complete a second round of surveys for Indiana bats in 2006.

The 2002 Indiana bat mist net surveys were completed following the U.S. Fish and Wildlife Service Recovery Team netting guidelines. Sites were netted based upon a sampling design developed for the Camp and selected via a combination of two criteria, areal extent and streams that may provide suitable corridors for sampling. Though slight variations in net position occurred, in 2006, the same sites were netted to collect data associated with capture comparability and species diversity between the two studies.

The 2002 and 2006 surveys yielded 6 of 13 and 8 of 13 species, respectively, known from West Virginia. Three eastern small-footed bats, including one reproductive female, were captured during both survey events representing the only species designated "rare" in West Virginia. The remaining species captured are designated as "common" or "uncommon." Netting efforts provided no evidence that endangered Indiana bats use these areas during summer months.

The 2002 survey for the flat-spined three-toothed land snail was initiated by reviewing USGS topographic maps of the project area to identify areas exhibiting steep slopes and potential for large sandstone outcrops to occur. These features typically occur in canyon "rim" areas and places where tributary valleys enter the canyon. A preliminary field survey was completed on the facility to identify suitable habitat areas and the areas identified were revisited during peak snail activity, in May and June. Rock surfaces and crevices were located and the top layer of leaf litter was brushed away to reveal any snails present. Snails found were processed and data recorded included: snail diameter and height measurements, behavior, distance to rock, slope, aspect, GPS coordinates, and site characteristics such as overstory and understory vegetation. Live snails were left unharmed in the field; empty shells were collected. When possible, field surveys were completed after a rain event when the ground was wet and humidity high.

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**APPENDIX D
CERTIFICATION AND SIGNATURE PAGE,
ADDENDUM ACKNOWLEDGEMENT FORM, AND PURCHASING AFFIDAVIT**



DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Douglas McNeill, Marketing Manager

 (Name, Title)
 Environmental Solutions & Innovations, Inc.

 (Printed Name and Title)
 4525 Este Avenue, Cincinnati, OH 45232

 (Address)
 (513) 451-1777 / (513) 451-3321

 (Phone Number) / (Fax Number)
 dmcneill@envsi.com

 (email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Environmental Solutions & Innovations, Inc.

 (Company) *D McNeill*

 (Authorized Signature) (Representative Name, Title)
 Douglas McNeill, Marketing Manager

 (Printed Name and Title of Authorized Representative)

25 February 2019

 (Date)
 (513) 451-1777 / (513) 451-3321

 (Phone Number) (Fax Number)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: ADJ190000009

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Environmental Solutions & Innovations, Inc.

Company



Authorized Signature

25 February 2019

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

Revised 6/8/2012

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Environmental Solutions & Innovations, Inc.

Authorized Signature:  Date: 25 February 2019

State of Ohio

County of Hamilton, to-wit:

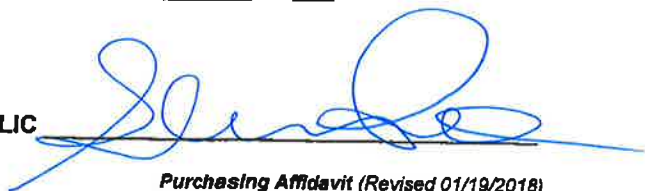
Taken, subscribed, and sworn to before me this 25 day of February, 2019.

My Commission expires 22 January, 2022.



SHAWNA PETTUS
Notary Public, State of Ohio
My Commission Expires 01-22-2022

NOTARY PUBLIC



Purchasing Affidavit (Revised 01/19/2018)