



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

23 JULY 2019

REQUEST FOR STATEMENTS OF INTEREST

NUMBER W9126G-19-2-SOI-8976

PROJECT TO BE INITIATED IN 2019

Project Title: Natural Resource Habitat Support for BMGR

Responses to this Request for Statements of Interest will be used to identify potential investigators for a project to be funded by [the US Air Force](#), which provides professional and technical support for its [Integrated Natural Resources Management Plan \(INRMP\)](#) in order to facilitate successful implementation of the [16 USC 670c-1 Sikes Act](#). Approximately **\$211,700.00** is expected to be available to support this project for the base year.

Background:

Provide natural resource environmental expertise on BMGR/LAFB, to include, but not limited to; planning, monitoring, plotting, surveying, evaluating species, and providing optimal management of the installations natural resources.

Type of Award:

In accordance with the *Sikes Act* (Sec. 103A [16 USC 670c-1]) “the Secretary of a military department may enter into cooperative agreements with States, local governments, Indian Tribes, non-governmental organizations, and individuals” This project is in support of the Integrated Natural Resources Management Plan, as directed in the *Sikes Act*, and as a result, it is anticipated that a cooperative agreement through the CESU program will be awarded. Such awards may be administered through a CESU only upon mutual agreement and official authorization by both parties of the acceptance of the application of the CESU Network IDC rate (17.5%).

Note: Must be a non-federal partner in the CESU Unit to be qualified to be considered.

Brief Description of Anticipated Work:

This project focuses on the following general tasks:

TASK 1 – MGT, HABITAT, EVALUATE DEGRADATION-EROSION, NURD270019

WATERSHED EROSION MODELING ON THE BARRY M. GOLDWATER RANGE EAST, ARIZONA

The purpose of this task is to assess current erosion status within the watershed and evaluate possible engineering management practices that will mitigate erosion. To achieve this objective, available data will be examined and field investigations conducted in order to complete an overall watershed and erosion analysis. Based on the results of the analysis, best management practices will then be developed to address current erosion areas of concern and minimize future erosion at BMGR East.

In order to accomplish the work specified in this task order, it shall be necessary for the cooperator to complete the following tasks:

Task 1.1: Develop watershed model

Conduct literature review of past and existing studies on the range. Through this literature review, collect topographic, hydrologic, land-use, and vegetation cover data for the entire range. Changes of land surface elevation, land-use, and vegetation will be analyzed and formatted as input to the watershed assessment model. Watershed model will be developed to look at flowlines and watersheds throughout BMGR East.

Task 1.2: Prioritize severe erosion sites and perform additional investigation of sites.

The watershed model for the BMGR East will be used to identify the areas that are most prone to erosion. Areas most prone to erosion will be investigated to determine whether additional monitoring is needed at these sites (e.g. installation of sediment traps).

Task 1.3: Frequently calibrate the watershed model using the sampled data.

The watershed model will be calibrated using the updated monitoring data. The calibration parameters include flow roughness, erosion parameters, and soil properties. The calibrated model can be used to predict erosion rates within the entire management range, and evaluate the impacts of various anthropogenic activities on erosion. Scenarios, such as with or without roads, different traffic maps, can be developed to evaluate their impacts on hydrology and surface erosion.

Task 1.4: Evaluate, recommend, and implement erosion control measures

Many erosion control measures (e.g. culverts, dikes, low-head dams, ripraps, cement materials, and bio-engineering mattress) are available but may not be suitable due to specific site conditions. Erosion control measures suitable to a specific site will depend on the amount of sediment load, flow intensity, and local topographic settings. This task will examine each site and recommend suitable erosion control measures. Erosion control measures will be implemented in coordination with the BMGR staff if funding is available.

TASK 2 – MGT, HABITAT, BMGR EAST LANDSCAPES, NURDOS1219 TERRESTRIAL VEGETATION AND SOILS MONITORING ON THE BARRY M. GOLDWATER RANGE EAST, ARIZONA

Vegetation and soils provide the ecological foundation for arid and semi-arid ecosystems, comprise the habitat for terrestrial wildlife, and are the portions of the ecosystem that are most accessible and influenced by management actions. This work is allowing for the rapid gain of key insights into vegetation and soil characteristics on BMGR East.

Field crews will establish long-term vegetation monitoring plots and will gather quality assured biological data, implementing the protocols developed by the FWS and NPS Inventory & Monitoring networks. Data gathered will include percent vegetation percent cover, vegetation frequency, vegetation density, soil cover by substrate type, biological soil crust cover and frequency, and surface soil aggregate stability and bulk density.

Terrestrial vegetation – For the terrestrial vegetation monitoring effort, crews will record the vegetation cover of common perennial species (>10% canopy cover), including non-native plants and a small suite of non-native species, and the frequency of uncommon perennial species (including non-native) and annual non-native species.

Objective 1 – Monitoring vegetation cover

Determine the status of and detect trends in vegetative cover (%) of common (>10% absolute cover) native and non-native perennial plant species and a small suite of non-native annual plant species that occur in terrestrial ecosystems of network parks. Measuring vegetative cover of common perennial species is an effective and traditional approach for monitoring plant populations (Elzinga et al. 1998). Cover is the percentage of ground surface covered by vegetation material (Bonham 1989), providing both an absolute and relative measure of species and lifeform abundance. This approach allows determination of status and detection of trend within a single species of interest, facilitating the use of “keystone” and “indicator” species and providing focused information on species of management concern (e.g., established exotic invasive species or “flagship” species, such as saguaro cacti). Determining the foliar cover of all common perennial species permits direct contrasts of species of interest and ensures that information is not lost if future research or management objectives focus on a species that is currently a lower priority. The disadvantage of collecting multi-species foliar cover data in this fashion is that it requires considerable field effort and methods that are effective across all lifeforms (from large tree to small herb).

Objective 2 – Monitor species frequency

Determine the status of and detect trends in the frequency (%) of uncommon (10% cover) native and non-native species (perennial and select annual) in terrestrial ecosystems of network parks. This is our most easily achieved monitoring objective for terrestrial vegetation. Plant frequency is the number of times a plant species/lifeform is encountered in a given number of plots or sample points (Bonham 1989), providing a measure of the occurrence and distribution of species within a landscape or stratum of interest. Frequency provides an effective index of change over time and space, and can efficiently provide information on species and lifeforms that are uncommon or have highly variable year-to-year distributions, such as most desert annuals (Elzinga et al. 1998).

However, frequency is affected by plant density and spatial arrangement, as well as plot size and arrangement, and is difficult to visualize across a landscape.

Objective 3 – Monitor density of selected plant species

Determine the status of and detect trends in the density (individuals/hectare) of columnar cacti and ocotillo as they occur in network parks. Columnar cacti, such as saguaro (*Carnegiea gigantea*), organ pipe (*Stenocereus thurberi*), and senita (*Pachycereus schottii*) are emblematic species of the Sonoran Desert, and ocotillo (*Fouquieria* sp.) is a common flagship plant in both the Chihuahuan and Sonoran deserts (Dimmitt 2000). However, the foliar cover and frequency (as collected for this protocol) of these important species may not consistently represent their relative abundance or condition within park plant communities. Instead, we will complement our cover and frequency monitoring of these focal plant species with density measurements by height class.

Soils – To track dynamic soil functions, crew will monitor the cover of soil by biological soil crusts, vegetation, litter, and abiotic materials that influence soil movement; the stability of surface soil aggregates; and, when and where warranted by declines in these soils properties, the bulk density of near-surface soils.

Objective 4 – Monitor soil cover, fuels, and biological soil crust cover and frequency

Determine the status of and detect trends in soil cover (percent by type) and cover and frequency of biological soil crusts (percent by lichen growth form and morphological group for cyanobacteria and bryophytes) in terrestrial ecosystems of network parks. Soil cover is the percentage of the soil surface covered by substrate class (e.g., litter, duff, bedrock, gravel, rocks, and vegetation; Herrick et al. 2005b), providing an absolute and relative measure of these objects that influence erosion resistance. By subdividing the litter substrate into standard fuel classes as used by the NPS Fire Ecology program (NPS 2003), additional data about fire potential and fuel models can be obtained.

Objective 5 – Monitor soil aggregate stability

Determine the status of and detect trends in surface soil aggregate stability (by stability category, 1–6) in terrestrial ecosystems of network parks. Surface soil aggregate stability is the resistance of soil aggregates on and near the soil surface to degradation (Herrick et al. 2005b). Soil aggregate stability provides both an indicator of site disturbance and site resistance to soil erosion and provides insights into soil water-holding capacity and infiltration rates.

Objective 6 – Estimate baseline soil characteristic: bulk density, texture and chemistry

Determine the status of and document dramatic shifts in soil bulk density (mass per unit volume of the bulk soil matrix) in terrestrial ecosystems of network parks. Collect soil samples during the establishment of each new plot to estimate soil bulk density, texture, and basic chemistry for these permanent sites. This baseline soils information is useful for interpreting data on soil aggregate stability, biological soil crust, and vegetation monitoring. Due to the destructive nature

of sampling techniques and the resistance of these parameters to change, bulk density, texture, and chemistry will only be re-measured if observations indicate substantial disturbance, such as from fire, landslide, or severe erosion.

NOTE: At this time we are only requesting that you demonstrate available qualifications and skills for performing similar or same type of work. You will be evaluated for request for a proposal based on skills, qualifications and certifications demonstrated in your SOI.

Period of Performance. The period of performance is 12 months from Award.

Materials Requested for Statement of Interest/Qualifications:

Please provide the following via e-mail attachment to: Alisa.Marshall@usace.army.mil and Kali.L.Evans@usace.army.mil (Maximum length: 2 pages, single-spaced 12 pt. font).

1. Name, Organization, Cage Code, Duns number, and Contact Information
2. Brief Statement of Qualifications (including):
 - a. Biographical Sketch,
 - b. Relevant past projects and clients with brief descriptions of these projects,
 - c. Staff, faculty or students available to work on this project and their areas of expertise,
 - d. Any brief description of capabilities to successfully complete the project you may wish to add (e.g. equipment, laboratory facilities, greenhouse facilities, field facilities, etc.).

Note: A full study proposal and proposed budget are NOT requested at this time. Additional Specific Requirements are as follows:

Qualifications include:

The NFE should provide personnel with the necessary experience and background in order to perform the tasks at and around the BMGR and LAFB:

- Experience with Arizona State, Federal, and applicable environmental Laws and Regs,
- Experience on the Barry M. Goldwater Range and natural resources experience in the State of Arizona are highly desirable,
- The NFE requires a security clearance for unescorted entry into restricted or controlled areas prior to reporting for duty in support of the Task Order. It shall be the responsibility of the NFE to provide all documentation required for security certification. No foreign nationals shall be employed for any task order issued under this contract without prior approval of the Government..
- Personnel must be able to pass drug screening test, obtain and hold a Common Access Card, and pass and hold a National Agency Check with Inquiry (NACI). Personnel entering data into the ESOH EIS Data Base will need to complete a DD Form 2875 System Access Request Form.

Review of Statements Received: All statements of interest received will be evaluated by a board comprised of one or more people at the receiving installation or activity, who will determine which statement(s) best meet the program objectives. Based on a review of the Statements of Interest received, an investigator or investigators will be invited to prepare a full study proposal. Statements will be evaluated based on the investigator's specific experience and capabilities in areas related to the study requirements.

Please send responses or direct questions to:

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Timeline for Review of Statements of Interest: The RSOI are required to be out for a minimum of 10 working days. Review of Statements of Interest will begin **August 6, 2019**.

[End of RSOI]