SCOPE OF WORK
NATURAL RESOURCES SUPPORT
UTAH TEST AND TRAINING RANGE, UTAH AND NEVADA
CESU-17-24

1. GENERAL

In accordance with FAR 7.503(e), projects for execution under this CA by USACE do not include any functions to be performed that are inherently governmental. This determination is made with the assessment that places emphasis on the degree to which conditions and facts restrict the discretionary authority, decision-making responsibility, or accountability of Government officials using NFE services or work products.

In accordance with FAR 37.104, this CA shall not be used for performance of personal services. These tasks provided by the customer for execution under this CA by USACE do not include functions to be performed that are personal services.

Any modifications to Cooperative Agreement activities as outlined by this SOW/PWS must be channeled through the Grants Officer's Technical Representative (GOTR) and Grants Officer (GO) prior to Non-Federal Entity (NFE) implementation.

NFE personnel shall also wear a distinctive NFE furnished security (ID) badge/lanyard readily identifying the individual as a NFE employee. The badge shall be worn in a conspicuous place at all times when performing work under the Cooperative Agreement including attendance at Government meetings and conferences that take place outside of the Government facility.

NFE personnel shall identify themselves as an NFE employee when answering or placing calls on a Government telephone and when leaving outgoing or incoming messages on voice mail. Use of acronyms in this identification is insufficient to meet this requirement.

All NFE email signatures shall identify them as such and will include their employer's name.

PERIOD OF PERFORMANCE: 12 months.

GOVERNMENT POCS:

1. USACE Omaha District POC: Mr. David Leptien PM, (402) 995-2742, david.b.leptien@usace.army.mil
2. USACE Omaha District POC: Ms. Kali Evans, GOTR, (402) 995-2295, kali.l.evans@usace.army.mil
3. USACE Omaha District POC: Ms. Stephanie Rostermundt, Grants Officer, (402) 995-2083, stephanie.a.rostermundt@usace.army.mil

This scope of work addresses the following tasks:

PROJECT NUMBER	TITLE	LOCATION
XQVEOS0262B7	MGT, HABITAT, SHRUBSTEPPE	UTTR, North Range
XQVEOS0264B7	MGT, INVASIVE SPECIES, NATIVE ECOSYSTEMS	UTTR, North Range
XQVE100217A	MGT, WILDLAND FIRE, HAG/GAT SEEDING	UTTR, North Range
XQVD0265B7	MGT, HABITAT, UTTR SOUTH	UTTR, South Range
XQVE0268B7	MGT, SPECIES, SNOWY PLOVER	UTTR

2. INTRODUCTION

The NFE should provide the necessary personnel, equipment, and materials required to conduct natural resource support, for the Natural Resources Program within the Hill AFB Environmental Branch located at Hill AFB, Utah. The work described in this Scope of Work (SOW) is in support of Hill AFB Natural Resources Program activities at its Utah Test and Training Range (UTTR). The objective of this task order (TO) includes supporting the Natural Resource Management Team (NRMT) with various duties including, but not limited to:

1. critical habitat mapping,
2. burrowing owl surveys,
3. burrowing owl boxes maintenance/refurbishment,
4. dark kangaroo mouse surveys,
5. golden eagle nest surveys,
6. raptor habitat surveys,
7. kit fox surveys,
8. avian surveys,
9. predator surveys,
10. mule deer habitat utilization survey,
11. reptile surveys,
12. vegetation monitoring,
13. range trend model updates,
14. wildlife monitoring,
15. creating green firebreaks,
16. burned-area succession rate determination, and

17. invasive species control and habitat restoration.

Because the Hill AFB Natural Resources Program is located at Hill AFB, this work requires an onsite support person located and based at Hill AFB, Davis County, Utah with experience accomplishing similar work in the region. The onsite work shall involve supervision and logistics support of intensive field work on the UTTR. The onsite support person will be responsible for the logistics for surveys and other work conducted mostly by student labor on Air Force lands and will facilitate access cards, Range Safety Briefings, and visitor requests for the UTTR for all tasks listed in this scope.

Travel to the UTTR will be required, up to 50-75% of the time during the field season (May-September). The UTTR North and South Ranges are approximately 2 hours from Salt Lake City, Utah. Some limited lodging is available at the UTTR North Range, but is not guaranteed and contingent on space availability due to other military activities. Camping may also be utilized on federal land outside of Air Force properties. A camp trailer can also be used and the AF will provide water and electrical hook-ups.

The Hill AFB Natural Resources Program equipment and supplies are staged and maintained at both Hill AFB and at the UTTR North Range. The on-site support person will also be responsible to make sure all equipment for surveys are maintained and ready to be employed for the field season. They will identify equipment and supplies that are needed as well and coordinate with the NFE to mitigate those needs. The onsite support person will facilitate coordination with the Hill AFB Natural Resources Manager and will meet biweekly to assure that work is continuing to move forward.

Hill AFB will provide administrative assistance, as appropriate and necessary to execute this task, and will provide assistance in the following areas:

1. Coordinate research activities with other installation entities and scheduling of range time.
2. Technical assistance and guidance
3. Close monitoring during performance. The Hill AFB Natural Resources Manager will provide bi-monthly meetings updates detailing all facets of data and information collected as part of this task, and management recommendations for future management.
4. Involvement in technical decisions such as methodology, priorities, and identification of vegetation mapping locations.
5. Participation in status meetings including kick off meeting and biweekly project update meetings.
6. Supply DBIDS access cards for all involved in the cooperative agreement work and need access to Hill AFB and the Utah Test and Training Range. A Background check will be required for those needing a card.
7. Supply a Common Access Card (CAC) and access to Air Force IT systems utilized by the Hill Natural Resources Program. This will require a favorable Security Background Investigation as well as successful completion of the applicable security and training requirements associated with such access.
8. Help facilitate the acquisition of a Government Driver’s License to allow for the operation of Government owned vehicles including Agricultural Tractors. Before tractor

endorsements are given, individuals operating agricultural tractors must do the appropriate and required training.

3. TASK OBJECTIVES

3.1. XQVEOS0262B7 - MGT, HABITAT, SHRUBSTEPPE (UTTR, North Range)

3.1.1. Burrowing Owl Surveys

The objective of this project is to trap burrowing owls and place leg bands on juveniles and a few GPS/telemetry harnesses on adult individuals to increase knowledge on their habitat use, prey base health (diet), nesting habitat, and migration patterns. Using this data, determine the presence and distribution, territories, site and burrow fidelity, densities (aggregations), migration patterns, mortality and predation of the burrowing owl. Use GIS technology to identify predictive habitat distribution (habitat suitability models) on the UTTR North Range, as well as other DoD lands that these birds may visit that provides life requirements for this species.

Trapping will take place on all potential burrowing owl habitat of the UTTR North Range from April to September. Some visual and vocalization surveys will also be conducted adjacent to the UTTR in cooperation and consultation with the State of Utah. This task further requires the NFE to research any other burrowing owl studies in the region that may help acquire additional data as well as contribute to the ongoing research at other DoD installations in the Great Basin Ecoregion.

The NFE will utilize at least one person that will travel frequently up to 2-3 days a week from April until September to the UTTR North Range and requires work at both dawn and at dusk. Task will require banding permit or sub-permit and a Certificate of Registration with the Utah Division of Wildlife Resources.

3.1.2. Burrowing Owl Boxes Maintenance/Refurbishment

Maintain existing burrowing owl boxes on the UTTR North Range that have filled up with debris, or are uninviting based on the latest usage data and latest specifications for successful boxes from September through November. Additional Companion burrows will also be created as a stash for food items and for fledglings to utilize until migration near burrows that were active in 2015/2016. Additionally, six new boxes will be constructed in suitable habitat that could potentially help increase burrowing owl nesting on the UTTR North. Special attention to owls and prey base in prior restoration areas since 2007 should also receive special consideration and analysis. This task will help protect and enhance habitat for a state listed sensitive species. The NFE shall have at least one individual to complete this task travel to the UTTR North Range. Overnight stays are possible.

3.1.3. Dark Kangaroo Mouse and other small mammal Surveys

The NFE will conduct small mammal surveys in locations identified by the installation POC on the UTTR North Range to determine presence, population, and life requirements of the Dark

Kangaroo Mouse and other small mammals to determine what areas of the UTTR North Range provide critical habitat for each species. Surveys will include areas of known habitat locations and potential habitats based on predictive habitat suitability models. Once surveys are complete; data, management recommendations, and mitigation strategies will be documented in a report. Comparisons with historic data collection on the same locations should also be described. Trapping will be conducted utilizing the best methods available and at the appropriate timeframes for successful trapping. Historically, Sherman traps in arrays of 50 traps each have been used. Travel will be required and overnight stays will be the norm as traps will be set in the evening and opened in the morning. Trapping locations are anywhere from 1.5 to 2.5 hours from Salt Lake City, Utah. Overnight stays will be required for the health and welfare of the small mammals being trapped and the hours of the day required to do the work. A Certificate of Registration will be required for this effort from the Utah Division of Wildlife Resources.

3.1.4. Golden Eagle Nest Surveys

The Air Force has GPS packs available for deployment on eagles. It will be the responsibility of the NFE to coordinate the applications of these packs on Golden Eagles. These packs will be applied to a select number of Golden Eagles (adults and or sub-adults) in order to track movement and activity in cooperation with the Legacy Raptor Project. Data from the partnership will be used to determine territory variability and overlap, nest distribution, reproductive success, prey base selection, and delivery, site fidelity, and other variables important to the flying mission of the Air Force like elevation and other interactions with aircraft. Assistance from Hawkwatch International is preferred. Most nests are located with 1.5 hours from Salt Lake City, Utah. 4 are located near Wendover, Nevada. Additionally, the NFE should make some hypothesis on territory re-establishment; particularly, the Charlie and Homestead nesting territories where it is known that one of the nesting pair have died. Bi-monthly updates are suggested with a report required to the Hill AFB Natural Resources Manager detailing all facets of data and information collected as part of this task, and management recommendations for future management is required. Field technicians must be trained in trapping, handling, banding, rappelling and surveying methods.

3.1.5. Raptor Surveys

The NFE will put emphasis on Swainson's and Ferruginous hawks to determine the limitations (natural or man-caused) to nesting and utilization of the UTTR North. However, all potential raptor habitats on the installation lands will be surveyed in spring timeframe until the PoP expires for resident nesting birds and during the winter for winter migrant species. The NFE shall utilize two individuals that have the ability to identify raptors at great distances and have good skills utilizing optics. Maps, shape-files, and a report will be due by the end of the PoP that discusses data collected, threats, potential research needs, and conservation and management of raptors on the UTTR North Range.

3.1.6. Predator Surveys

The NFE will study predators on the UTTR north by supporting ongoing projects with Kit fox and Bobcat. Predator surveys need to be conducted to obtain Predator-Prey relationships. This

relationship is an important aspect of managing all species, their habitat, and is extremely important when managing species at risk. This relationship needs managed to have a health ecosystem. Data collected from this survey will be used to establish a predator species list and population densities of predators that exist on the UTTR North Range. The main focus will be on mesocarnivore predators. This task will also track the seasonal movements of representative individual predator species, and determine what prey species these predators use on a seasonal basis. The main focus of collection this data will be to analyze and determine predator interaction with Species of Concern such as Golden Eagles, Kit Fox, and Burrowing Owls.

he task will include ocular surveys during diurnal and nocturnal hours in order to maximize observation efforts during different feeding time of the various predator species. Camera Trap Survey (motion cameras) will be used as well to collect data. The use of GPS or telemetry collars is also a possibility under this task. One (1) day for installation of cameras in mid-March will be needed and one (1) day to remove them in mid-November.

Data from the SD card will be pulled and downloaded on a monthly basis. Predator scat will be collected to determine diet. Other potential survey methods could be used and will be left up to the NFE to determine effective detection methods. The data from these surveys will be analyzed to show the relationships and interactions in a predator/prey relationship. The NFE shall utilize two individuals for this effort. This task requires a written report of data collected on UTTR North Range with NFE providing all data collected and any details as to how they would proceed with this task to the Hill AFB Natural Resources Manager.

3.1.7. Mule Deer Habitat Utilization Survey

Trap 8 deer and outfit with existing CTT/VHF ear tags to study habitat utilization, home range with seasonal variations, frequency of water utilization, fawning areas, rutting activity, trends, and correlation between habitat tasks and deer utilization. Information will be compared to deer outside of the UTTR (if available) to help explain potential population and survival differences in the west desert of Utah. The NFE will be responsible for trapping additional deer if there is mortality with some of the study deer and there is still useful life with the ear tag units and valuable data can still be collected. Field technicians will be needed, but much of the monitoring will be done at the computer. A report on the findings will be required. Some travel to the UTTR North Range will be necessary. The NFE will provide bi-monthly updates on task status and on deer patterns and movements and a report detailing all data collection observations.

A report at the end of the PoP will be due to the Hill AFB Natural Resources Manager. The report should detail potential reasons for low deer numbers (30-35) on the UTTR compared to these other areas within the MOA. Potential military and other impacts on the population should be documented along with analysis of the Mule deer as an indicator species for the shrub-steppe habitat type. Discuss what other species, especially sensitive species like the Pygmy rabbit, Sage grouse, Sage sparrow, Ferruginous hawk, Kit fox, and others have been impacted by the same potential reasons for low deer numbers. This task will also glean data from Task 3.2.12 below for analysis on other large mammal species.

3.1.8. Avian Surveys

Conduct avian surveys in predetermined sites utilizing point count and mist netting survey methods on the UTTR North Range. Surveys will be conducted during different seasons of the year to determine the use of installation lands by migrating avian species as well as resident species with specific emphasis on areas with high military use. Additionally, surveys should utilize the NR Program sound meter as well as general observations during military training exercises to provide additional data for comparison.

Surveys will then be compared to those in similar habitats to help determine if there are military impacts due to noise and other factors due to training mission. Each Point Count survey route consists of 10 points each and requires at least one individual to complete. Two separate mist net surveys and banding stations will be conducted repeatedly on 20 day intervals during the migration season. Data will be entered into the USGS data clearinghouse utilizing the Bandit software.

Local data will be compiled with all past surveys that have been completed to develop a trend report that indicates usage of the installation lands by migratory species, biodiversity of avian species, and the ecosystems ability to sustain avian species. It will also give Hill AFB another reference as to the health of the ecosystem on the UTTR coupled with the data from the other surveys listed in this document. This task will require a banding permit from the USGS or work under a permitee, as a sub-permittee. If the NFE does not have bands, bands can be obtained from the Utah Division of Wildlife Resources. This will require multiple field technicians and traveling to the UTTR and will require overnight stays to set up nets in the evening and opening of nets and trapping in the mornings or early mornings for point counts.

Netting will occur at least 6 times annually per site. A report utilizing data from both point count and mist nets will be developed that reports on species richness, relative abundance, density estimates, age classification (nets only), diversity indices, and trends, especially compared to historical data that will be provided to the NFE from the Hill AFB Natural Resources Program. Travel will be required and will require individuals to be working pre-dawn hours. Individuals utilized for this task could also be utilized on other tasks as well as long as they did not conflict with timing of other surveys.

3.1.9. Reptile Surveys

Conduct reptile surveys on six existing reptile array sites identified by the installation POC. The NFE will be responsible for repairing these arrays if necessary. Data from this task will allow analysis of habitat use by species and will, to a limited extent, allow for analysis of species distribution and relative abundance. Reptiles will be surveyed by using live capture techniques that involved one array of various traps per survey site. An array consists of a Y-shaped formation with seven 5-gallon pitfall traps arranged along metal flashing drift fences. Each arm of the array will also have one wire mesh funnel trap. At the north and south ends of the array, a half sheet of plywood will be laid out to attract reptiles seeking either daytime or nighttime shelter.

The traps will be checked daily to lessen mortality rates. A small wet sponge will be placed inside each bucket to provide a water source. In addition, a structure to provide shade will be inserted in each bucket. Reptiles will be captured live, identified, measured then released unharmed. The data will include species, health status of reptile populations and identification of any new T&E or SOC reptile species.

A final report following the field season will be required that details findings on species richness and health as well as preliminary results of the impacts of wildfire and invasive species. A COR will be required from the Utah Division of Wildlife Resources. The NFE shall utilize up to 2 field technicians be for this task. It is anticipated coordination of man hours while the arrays are open. Each array will be open at least 10 days (not concurrent) during the summer months when reptiles are most active. It is also anticipated there will be office time to compile a report. Safety equipment and proper training to handle reptiles will also be required, including rattle snakes. Some overnight travel might be required depending on scheduling and logistics set by the NFE.

3.1.10. Vegetation Monitoring

Vegetation Monitoring will be performed on at least 40 sites on the UTTR North Range as identified by the Hill AFB Natural Resources Manager. This will include established transects for trending and new sites identified by the Hill AFB Natural Resources Manager, but will be primarily focused on sites that have been previously surveyed, but were not able to be surveyed during the five year intervals identified in the survey model for trending.

The purpose of this task is to provide long term trend and site condition that can be extrapolated to areas surrounding the site as well as the same habitat type found in another location. Trending is important because it helps determine what sites have fallen below an ecological threshold that can no longer support native vegetation that can support healthy wildlife populations and can drive restoration efforts. It will be the responsibility of the NFE to conduct these surveys, add them to the natural resources database, and compare and analyze data and provide the Base with a report.

A research component should also be conducted with these surveys to compare various survey methods involving transects to see if results are similar and what survey gives the most reliable data set for analysis. This task will require field time and office time to complete a trend report. The Base has some limited tools for these surveys which could be used. The NFE will utilize the Base protocol method (called Hybrid, or Range Health Index (RHI) by Hill AFB) and compare it to a more traditional line transect and frame method accepted widely by the research community. Hill AFB will provide all past data collected on sites identified for re-survey.

3.1.11. Range Trend Model Updates

Utilizing information collected in Task 3.2.10 and after the field season, it will be the responsibility of the NFE to contact the Natural Resource Conservation Service (NRCS State Office) and facilitate a meeting to discuss existing State and Trend models specific to the UTTR where survey plots were done. The NFE will help update these models to enable better restoration efforts on the UTTR North Range and other surrounding lands as well as better

information to end users of the models for years to come. Any improvements made to the models will be approved by the NRCS State Office and run through their process.

The NFE shall utilize one (1) individual for approximately 20 days (office and field) to complete. Field work will be no farther than 2 hours from Salt Lake City, Utah. Information developed and perfected for Range Trend Models will help improve range improvement and restoration tasks in the future outlined in 3.4.1 below. Better success in tasks and models will potentially lead to decreased restoration costs.

3.1.12. Wildlife Monitoring

Motion cameras will be installed on guzzlers (16) during the spring, summer and fall seasons as part of the wildlife monitoring program. Any damaged or non-functional cameras will be repaired or replaced. This task will assist in the identification of SOC, collared, tagged, and banded species, and new unidentified species of wildlife.

The NFE shall utilize at one (1) person to pull SD cards and analyze the data. Data (image) downloads will be required on a monthly basis. Cameras will be installed in Mid-march and will be removed in mid-November. On average, it takes only 1 to 2 days for maintenance, 1 day for installation of cameras, 1 day to download data per month, and 1 day to remove cameras for winter storage. While on site, the NFE will have responsibility to inspect and maintain the guzzlers. Many of the guzzlers have new aprons and Boss Tanks, most of the maintenance will be minor. It might require some caulking of joints in the metal rain gutters and checking and replacing some lag screws in the tin apron. It will also require cleaning of the drinker as debris like tumble weeds get blown in. This task will require field work, photo analysis, and office time to complete the report.

The NFE will obtain additional motion cameras for observation on Golden Eagle nests and potential pygmy rabbit burrows. For eagles, cameras will be placed in time for nesting season with enough memory available to last through the nesting season. However memory cards could be exchanged when chicks are banded in the spring time frame as well. Cameras will require a mount capable of being installed on a rock face that blends with the natural surroundings. Images will be used to determine prey delivery rates, prey base of a certain nest, and prey quality. Those placed on potential pygmy rabbit burrows and sites will focus on presence/absence of the species.

Information required in a report includes date, time, species, number of individuals, and any distinguishing marks like bands or ear tags. Data can and should be utilized for other tasks identified above. The NFE will provide the Base with a report and all images from each guzzler each month that the images are downloaded. The NFE will discuss with the Hill AFB Natural Resources Manager what data fields would be important and useful besides date, time, species, and anything noteworthy or unique. The NFE will obtain additional motion cameras for observation on Golden Eagle nests and potential pygmy rabbit burrows. For eagles, cameras will be placed in time for nesting season with enough memory available to last through the nesting season. However memory cards could be exchanged when chicks are banded in the spring time frame as well. Cameras will require a mount capable of being installed on a rock face that

blends with the natural surroundings. Images will be used to determine prey delivery rates, prey base of a certain nest, and prey quality. Those placed on potential pygmy rabbit burrows and sites will focus on presence/absence of the species.

3.2. XQVEOS0264B7 MGT, INVASIVE SPECIES, NATIVE ECOSYSTEMS – RANGE (UTTR, North Range)

3.2.1. Invasive Species Control and Habitat Restoration

The UTTR has had a large number of acres that have been disturbed by wildland fires and encroachments of invasive species have destroyed the native plant communities. Invasive species of grasses and forbs have become the dominate species of these degraded habitats. These invasive species have added to the frequency of fire events by producing excess fuel each year. To mitigate this management problem, a habitat restoration task was initiated in 2004. The task involved planting Forage Kochia (*Kochia prostrate*) as a fire break to protect future restoration areas. Forage Kochia is an introduced forb/shrub that has proven to crowd out invasive plants, provide a fire barrier, provide food for wildlife, and not spread to other areas. After the establishment of fire breaks, the intermediate step of planting of grasses and forbs that will out-compete invasive species will follow. The final stage involves planting selected species of native grasses, forbs and shrubs in an effort to reestablish a characteristic native plant community.

This task will continue the habitat restoration task that has been ongoing since 2004. The task also involves restoration on at least 600 acres on the UTTR North Range that requires a task entry in the Utah Watershed Restoration Initiative Database, formulation and consultation on seed mixes and methods with State and Federal players, base line inventories, and the implementation and completion of the task. The NFE will supply seed and personnel. The NFE shall utilize multiple technicians to complete. Equipment for this task is available on Base, but will require some minor maintenance. This task will require individuals capable of planning and implementing a restoration task with assistance from the Hill AFB Natural Resources Manager. It will require being coordinated during the months of September and December.

3.3. XQVE100217A MGT, WILDLAND FIRE, HAG/GAT SEEDING

3.3.1. Invasive Species Control and Habitat Restoration

The UTTR has had a large number of acres that have been disturbed by wildland fires and encroachments of invasive species have destroyed the native plant communities. Invasive species of grasses and forbs have become the dominate species of these degraded habitats. These invasive species have added to the frequency of fire events by producing excess fuel each year. To mitigate this management problem, a habitat restoration task was initiated in 2004. The task involved planting Forage Kochia (*Kochia prostrate*) as a fire break to protect future restoration areas. Forage Kochia is an introduced forb/shrub that has proven to crowd out invasive plants, provide a fire barrier, provide food for wildlife, and not spread to other areas. The purpose of this task will be to create green firebreaks on the UTTR North Range to prevent the spread of wildland fires from known ignition locations.

Firebreak areas will be created by planting Forage Kochia in160-300 foot wide strips in areas that will contain fires from these ignition locations. The addition of Russian wildrye to these strips should also be used as it has shown to compete well with cheatgrass and other invasives allowing the biological soil crusts to reestablish. In addition, sage species and other forbs could be utilized where wildlife could also benefit and the risk of fire during establishment period is low.

After the establishment of fire breaks, the intermediate step of planting of grasses and forbs that will out-compete invasive species will follow. The final stage involves planting selected species of native grasses, forbs and shrubs in an effort to reestablish a characteristic native plant community. This task will continue the habitat restoration task that has been ongoing since 2004.

This project will require entry in the Utah Watershed Restoration Initiative Database, formulation and consultation on seed mixes and methods with State and Federal players, base line inventories, and the implementation and completion of the task. Seed and personnel will be supplied by the NFE. Most equipment for this task is available on Base, but will require some minor maintenance of equipment. This task will require 2 individuals capable of planning and implementing a restoration task with assistance from the Hill AFB Natural Resources Manager. It will be required in the months of October and November.

3.4. XQVD0265B7, MGT, HABITAT, UTTR SOUTH

3.4.1. Critical Habitat Mapping

Use GPS and GIS technology to locate, map, and model critical habitat of sensitive and species of concern that utilize the UTTR South Range. Lists of these species are identified on DoD Species of Concern, Utah Division of Wildlife's, State Sensitive Species list and Federal listings. Data collected will be used to identify critical areas that need protection in order to sustain the populations of these species. Conduct research and field surveys to identify critical habitats on the UTTR South Range then integrate the data into Hill AFB Natural Resources Program GIS Database and GeoBASE for future analysis. Layers will then be created to be utilized by the government for reports, NEPA analysis, updates to the INRMP and for historical records.

This task requires office and field work. Task will require at least 1 individual with GIS capability and a few others with ability in habitat analysis that can use a mapping GPS unit (Trimble or equivalent) for field proofing. Travel to the UTTR South Range will be required to accomplish this task and may require some overnight stays. Individuals will coordinate with the Hill AFB Natural Resources Manager to obtain all available GIS data on hand on the Base. Maps, GIS data, shape files will include applicable attributes and metadata, and a report will be provided to the Base that describes a predictive model that will drive future surveys, restoration needs, and research of critical habitat.

3.4.2. Burrowing Owl Surveys

Conduct Burrowing Owl surveys on the UTTR South Range using scientifically accepted survey protocols. Trap Burrowing Owls and place legs bands, and or GPS/telemetry harnesses on

individuals to assist in increasing knowledge on habitat use, prey base health (diet), nesting habitat, and migration patterns. Surveys will take place on all potential Burrowing Owl habitat sites on the UTTR South Range, from April to September. Both visual and vocalization surveys will need to be conducted immediately east of the UTTR South Range to the Cedar Mountains and on the north to I-80. Data will need to determine the presence and distribution, territories, site and burrow fidelity, densities (aggregations), migration patterns, mortality and predation of Burrowing Owl.

Use GIS technology to identify predictive habitat distribution (habitat suitability models) on the UTTR South Range that provides life requirements for this species. A report will be required as part of this task that reflects the data collected on the topics mentioned above and all localized threats to the Burrowing Owl on the UTTR South Range and how land practices, both on and off the UTTR South Range, could pose a threat to this species being listed. The report will also make suggestions on the management and conservation of this species. This task will require an individual(s) from April until September to travel to the UTTR and requires work at both dawn and at dusk. Some overnight stays may be necessary. Task will require banding permit or sub-permit and a COR with the Utah Division of Wildlife Resources.

3.4.3. Dark Kangaroo Mouse Surveys

Conduct Dark kangaroo mouse/small mammal survey on the on the UTTR South Range in the timeframe of March-October to determine presence, population, and life requirements of the Dark kangaroo mouse and determine what areas of the UTTR South Range provide critical habitat for this species. Surveys will include areas of known habitat locations and potential habitats based on predictive habitat suitability models. All other small mammals captured will also be documented on all survey sites as well.

This task could be worked by individuals working on other tasks and surveys as logistics and range scheduling allows. Trapping will be conducted utilizing the best methods available and at the appropriate timeframes for successful trapping. Historically, Sherman traps in arrays of 50 traps each have been used. Travel will be required and overnight stays will be the norm as traps will be set in the evening and opened in the morning.

Camping will be required for this task and can be done just outside of the UTTR on federal land. Trapping locations are anywhere from 1.5 to 2.5 hours from Salt Lake City, Utah. A Certificate of Registration will be required for this effort from the Utah Division of Wildlife Resources. A written report will provide data collected and make suggestions on the management and conservation of this species.

3.4.4. Golden Eagle Nest Surveys

Conduct nest surveys for Golden Eagle on the UTTR South Range during nesting season to determine occupancy, nest fidelity, reproductive success, fledgling success, and overall Golden Eagle condition. Conduct prey based surveys that will identify the type, abundance, diversity, and habitat health of prey species for Golden Eagles on the UTTR South Range. Band all nestlings before they fledge. Current Partnerships with Hawkwatch International, UDWR, and

local Universities will be utilized to the fullest extent possible. Field technicians will be trained in eagle trapping, handling, banding, rappelling and surveying methods. GPS backpacks will be applied to a select number of Golden Eagles in order to track movement and activity in cooperation with the Legacy Raptor Project. Banding of chicks will take place on all eaglets on the UTTR. Assistance from Hawkwatch International is preferred.

Data obtained through these efforts like determining territory variability and overlap, nest distribution, reproductive success, prey base selection, and delivery, site fidelity, and other variables important to the flying mission of the Air Force like elevation and other interactions with aircraft will be documented and assimilated in a report.

This task will require field technicians to participate in bi-weekly trips to the UTTR to cover and survey up to 8 nesting pairs on the UTTR. This will require scheduling and coordination of man hours until chicks fledge the nests from April until July. Most nests are located within 1.5 hours from Salt Lake City, Utah. However, up to 4 are located near Wendover, Nevada. Some overnight stays may be necessary. Bi-monthly updates with the Hill AFB Natural Resources Manager detailing all facets of data and information collected as part of this task, and management recommendations for future management are required.

3.4.5. Raptor Habitat and Nest Surveys

Use GIS technology to map raptor suitability habitat on the UTTR South Range and identify new nests, including those identified by the State of Utah as State Sensitive. These maps will identify all raptor nest sites including any new and raptor habitats and will be used to identify potential conflicts between mission requirements and protected raptors. Hill AFB Natural Resources Program will provide all available shape files from previous nest surveys. All potential raptor habitats on the UTTR South Range will be surveyed in the spring and summer for resident nesting birds and winter for winter migrants.

Conduct nest surveys on the UTTR South Range based on the raptor suitability maps. All raptor nests will be documented. Conduct nest surveys during nesting season to determine occupancy, reproductive success, fledgling success, and overall health of raptors. To complete this task, individuals shall have the ability to identify raptors at great distances and have good skills utilizing optics. This survey's primary focus on the UTTR is to support the flying mission of the Air Force which is critical.

Logistically, and due to scheduling of range time, individuals used for other tasks could be used to complete this task. Maps, shape-files, and a report will be due by the end of the PoP that discusses data collected, threats, potential research needs, and conservation and management of raptors on UTTR South Range.

3.4.6. Kit Fox Surveys

Although, kit foxes were abundant historically, their population and habitat have since dwindled due to numerous reasons. To better manage this species and their habitat, surveys will need to be conducted to establish what their population density is on the UTTR South Range. This task will include ocular surveys during diurnal and nocturnal hours in order to maximize observation

efforts during different feeding times of the kit fox. Kit fox are secretive animals; hence, Camera Trap Survey (motion cameras) will be utilized in potential habitat sites or on trails as applicable.

The NFE shall use 1 day for installation of cameras in mid-March and 1 day to remove them in mid-November. Data from the SD card will be pulled and downloaded on a monthly basis. Other potential survey methods could be used and will be left up to the NFE to determine effective detection methods. Other survey methods will include capture and release of kit foxes fitted GPS collars.

The collars will show field workers the daily and seasonal movement of kit foxes and to what extent they use the UTTR South Range. Any potential kit fox dens located will need to be GPS/mapped. Kit fox scat will be collected to determine diet. Since this data has not been collected on installation lands previously, it is expected that the NFE provide a report with data collected and recommendations as to how they would proceed with this task to the Hill AFB Natural Resources Manager.

3.4.7. Avian Surveys

Conduct avian surveys on the UTTR South Range at predetermined sites utilizing point count and mist netting survey methods that will pick up State Listed Sensitive Species such as Sage sparrow, Sage thrasher, and Grasshopper sparrow. Surveys will be conducted during different seasons of the year to determine the use of the UTTR South Range by migrating avian species as well as resident species.

Point Count surveys are conducted on a 5 year rotational basis with 5 surveys being completed annually with each survey route being conducted at least 4 times each. Each survey route consists of 10 points each and requires one individual to complete. One mist net surveys and banding station will be conducted repeatedly on a 20 day interval during the migration season.

Data will be entered into the USGS data clearinghouse utilizing the Bandit software. Local data will be compiled with past surveys that have been completed to develop a trend report that indicates usage of the installation lands by migratory species, biodiversity of avian species, and the ecosystems ability to sustain avian species. This task will require a banding permit from the USGS or work under a permitee, as a subpermittee. If the NFE does not have bands, bands can be obtained from the Utah Division of Wildlife Resources.

This task will require overnight stays to set up nets in the evening and opening of nets and trapping at dawn for point counts. Netting will occur at least 6 times during the field season per site. A report utilizing data from both point count and mist nets will be developed that reports on species richness, relative abundance, density estimates, age classification (nets only), diversity indices, and trends, especially compared to historical data that will be provided to the NFE from the Hill AFB Natural Resources Program.

Travel will be required and will require individuals to be working pre-dawn hours. Most sites and routes are within 1.5 to 2 hours from Salt Lake City Utah. It is expected that this task will require technicians working in the field and office hours to complete report. Individuals utilized

for this task could also be utilized on other tasks as well as long as they did not conflict with timing of other surveys.

3.4.8. Reptile Surveys

Conduct reptile surveys on six existing reptile array sites. The NFE will be responsible for repairing and preparing six existing reptile arrays found on the UTTR South Range. Data from this task will allow analysis of habitat use by species and will, to a limited extent, allow for analysis of species distribution and relative abundance. All captures will be conducted on six management sites. There are three trapping sites for each of four habitat types: Shadscale, Dune, Montane, and Greasewood habitats. Sites will be coordinated with the Hill Natural Resource Manager.

Reptiles will be surveyed by using live capture techniques that involved one array of various traps per survey site. An array consists of a Y-shaped formation with seven 5-gallon pitfall traps arranged along metal flashing drift fences. Each arm of the array will also have one wire mesh funnel trap. At the north and south ends of the array, a half sheet of plywood will be laid out to attract reptiles seeking either daytime or nighttime shelter. The traps will be checked daily to lessen mortality rates. A small wet sponge will be placed inside each bucket to provide a water source. In addition, a structure to provide shade will be inserted in each bucket. Reptiles will be captured live, identified, measured then released unharmed. The data will include species, health status of reptile populations and identification of any new T&E or SOC reptile species.

A final report following the field season will be required that details findings on species richness and health. A COR will be required from the Utah Division of Wildlife Resources. It is anticipated that this effort will require each array will be open at least 10 days (not concurrent) during the summer months when reptiles are most active. It is also anticipated there will be office hours to complete the report. Safety equipment and proper training to handle reptiles will also be required, including rattle snakes. Some overnight travel might be required depending on scheduling and logistics set by the NFE.

3.4.9. Vegetation Monitoring

Vegetation Monitoring will be performed on at least 30 sites on the UTTR South Range as identified by the Hill AFB Natural Resources Manager. This will include established transects for trending and new sites identified by the Hill AFB Natural Resources Manager. The purpose of this task is to provide long term trend and site condition that can be extrapolated to areas surrounding the site as well as the same habitat type found in another location.

Trending is important because it helps determine what sites have fallen below an ecological threshold that can no longer support native vegetation that can support healthy wildlife populations and can drive restoration efforts. It will be the responsibility of the NFE to conduct these surveys, add them to the natural resources database, and compare and analyze data and provide the Base with a report. A research component should also be conducted with these surveys to compare various survey methods involving transects to see if results are similar and what survey gives the most reliable data set for analysis.

This task will require technicians to complete field work as well as office time to complete the report. The Base has some limited tools for these surveys which could be used. The NFE will utilize the Base protocol method (called Hybrid, or Range Health Index (RHI) by Hill AFB) and compare it to a more traditional line transect and frame method accepted widely by the research community. Hill AFB will provide all past data collected on sites identified for re-survey.

3.5. XQVE0268B7, MGT, SPECIES, SNOWY PLOVER

3.5.1. Habitat Suitability Mapping

Population distribution and habitat preferences of snowy plover in western Utah are largely unknown and the Air Force owns and manages large acreage of the probable suitable habitat in this area. The NFE will utilize GIS Technology and available GIS coverages, as well as available predictive occupancy models to map out snowy plover habitat. The NFE will also use any existing data available from the UTTR. This effort will help to direct surveys. Maps, shape files, and other data will be integrated into the Hill Natural Resource Database.

3.5.2. Snowy Plover Monitoring

This project will help determine if the Air Force activities are having any negligible impacts on a species that is listed as “Highly Imperiled” in the United States Shorebird Conservation Plan and will give the ability to look and impacts and trend over space and time. The NFE will plan a monitoring strategy that includes details on timing, methods, equipment, and personnel needed to monitor.

The NFE will then implement the plan to inventory, survey, monitor, and refine maps after close consultation with the Hill Natural Resource Manager for approval. Survey methods can include fixed wing aircraft, but will need to be coordinated heavily with military training activities. Monthly updates will be required during active surveys.

Surveys will validate models and identify suitable habitats and provide an estimate of a breeding population. A report will be due before the end of the PoP, which addresses the Snowy Plover status on the UTTR and how this status compares to similar habitat outside the UTTR as available. The report must also document any potential threats caused by military actions and uses of the UTTR.

4. PREFERRED QUALIFICATIONS

4.1 The full-time on-site individual should have experience in the wildlife and vegetation ecology fields, especially as it relates to Utah’s west desert ecology or can adapt their knowledge and experience to this type of an environment. They need to be able to oversee parts of the Natural Resources Program at Hill AFB and associated properties with close consultation (liaison) with the Hill AFB Natural Resources Manager. They should have logistical ability and aptitude to coordinate multiple tasks conducted by student labor and other entities

simultaneously. They need to have good communication skills and the ability to communicate effectively.

4.2 Students involved in the tasks should be working towards degrees in the life sciences dealing with wildlife and vegetation ecology. Oversight is required of all research tasks, but field oversight can be done by the individual identified in 4.1 above in close consultation with the NFE. All individuals that are conducting field work will need a valid driver's license and be able to pass a security background check in order to obtain needed identification to access Installation properties. Individuals should be able to lift 50lbs and be able to walk and hike in remote areas over uneven ground.

4.3 All those conducting work associated with tasks will need to be certified on ATV's/UTV's with the ATV Safety Institute or other accepted ATV Training Course. Instructors are available on the installation and training could be arranged if needed.

5. GOVERNMENT FURNISHED MATERIALS

The Government has equipment for check out available to accomplish many of the above tasks including: 3 field packs with individualized gear, 4 ruggedized tablets, climbing gear for nest survey work, some traps, and misc. hand and power tools; however, some equipment may need to be purchased by the NFE to accomplish wildlife and vegetation surveys like additional optics, GPS units, weather monitors (Kestral), and possibly tablets for data collection. Please include any need for purchased equipment within your proposal. All individuals on the UTTR will be trained in range radio usage and at least one radio will be provided to the different teams of people working different tasks on the UTTR.

The Government has most of the equipment for the range restoration and seeding tasks listed above. Additional equipment needs can be sought from the Utah Division of Wildlife Great Basin Research Center via partnership with the Utah Watershed Restoration Initiative. The Government also owns two agricultural tractors and the NFE will be allowed to operate such equipment upon successful completion of required training and acquiring a Government driver's license with tractor endorsements (if such license is required). Any additional equipment needed for restoration that is not already owned by the government, including tractors will be provided by the NFE.

The Government will provide office space and computers for up to three people at Hill AFB in Davis County, Utah. As part of this task, the Government (Hill AFB) will provide Common Access Cards (CAC) and access to internal IT systems important to the management of Natural Resources. This includes Geographic Information Systems (GIS, GEOBase) and access to the shared Natural Resource internal drive location. An e-mail account will also be provided. The Government will conduct a NACI Favorable investigation required for CAC card authorization and issue before any CAC Card is issued. Individuals working under this task order that will have a CAC card are required to have the applicable security and training requirements required for access to Air Force IT systems. All Security badges/cards shall be returned to Base security upon expiration of the badge/card, upon completion of the task order, or when the possession of

the badge/card is no longer necessary. Wi-Fi is also available at the Oasis Compound. ATV's (4) and UTV's (5) will be available for survey work as well.

6. DELIVERABLES

- The NFE will be responsible for providing deliverables as identified in the tasks listed above in this scope. Any tasks that require data collection as part of that survey will provide data to the Hill AFB Natural Resources Manager by entering all data into the Hill AFB Natural Resources Program electronic database. Additionally, data will be summarized and included in quarterly progress reports and a final annual report of that task that details findings and observations and makes management recommendations. Drafts of reports will be made available to the Hill AFB Natural Resources Manager for review before the final report is completed and delivered.

- The NFE will be responsible for providing maps, shapefiles, and tables of data for all tasks that have a GIS mapping component to them. These will then be added to the Hill AFB Natural Resources Program GeoBase layers and GIS Database.

- The NFE is welcome and encouraged to present findings and results at professional meetings as approved by the Hill AFB Natural Resources Manager. Additionally, information will be presented at a Joint INRMP Coordination meeting co-hosted with the Army Dugway Proving Grounds annually.