

# ***99th Air Base Wing***

---

*Enable Success Through Innovative Base Support*

## **Restoration of R61B Road Nevada Test and Training Range to Benefit the Mojave Desert Tortoise**



**Anna Johnson  
Nellis Air Force Base  
Nellis Natural Resource Program**

**This Briefing is:  
UNCLASSIFIED**

---



# Topics

---

- **Restoration idea**
- **2019 project preparation**
- **NEPA**
- **Map**
- **Preliminary planning**
- **Equipment needs**
- **Seed mixture**
- **Pre-project tasks**
- **Restoration approach**



# Idea

- 
- 2018, the NTTR Environmental Liaison had an idea for a restoration location.
    - Desert tortoise habitat
    - 8-mile road on west side of range
  - The problem
    - Sections of the roadway bed are a mix of silt and clay which reduces mobility of vehicular traffic. Vehicles would get stuck in the fine soils, which resulted in widening of the roadway where vehicles have driven around impassible portions.
  - Range is typically used for helicopter training and Search and Rescue





*Enable Mission Success by Delivering Innovative Support*









# 2019 Project Preparation

---

- Funding for 2021
  - Staff time for site evaluation, planning, and implementation
  - Seed mix
  - Equipment needs
- Discussions with Wildland Fire Branch (BLM)
  - Provide equipment support
- Discussions with USFWS-Desert NWR
  - 1/3 of road on the Refuge



# Entering Desert National Wildlife Range

Special Regulations Apply

Consult Base Commander For Details

No off road vehicle travel permitted

All plants and animals are protected.

Do not disturb or remove.

Searching for or removing objects of antiquity,  
or defacing archaeological sites is prohibited

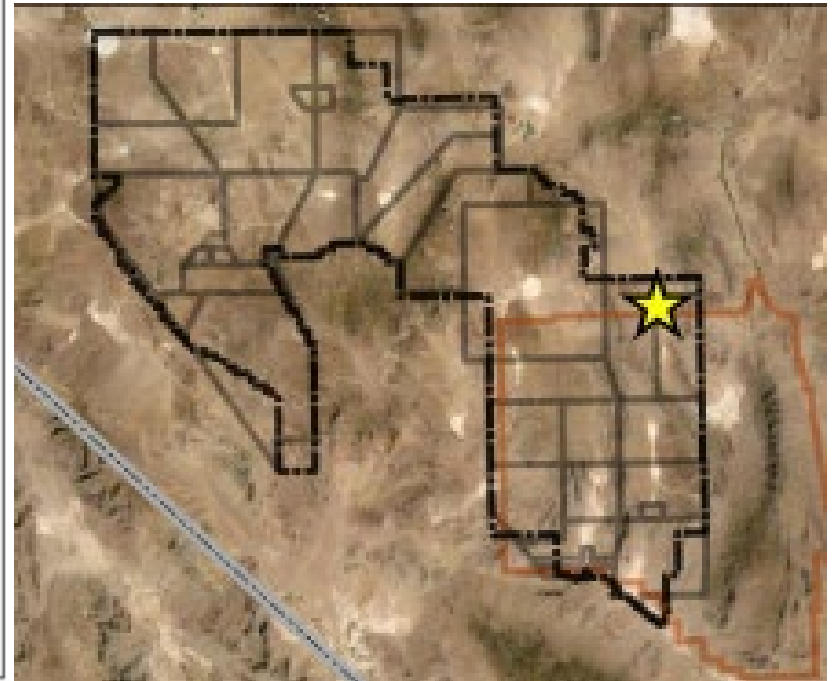
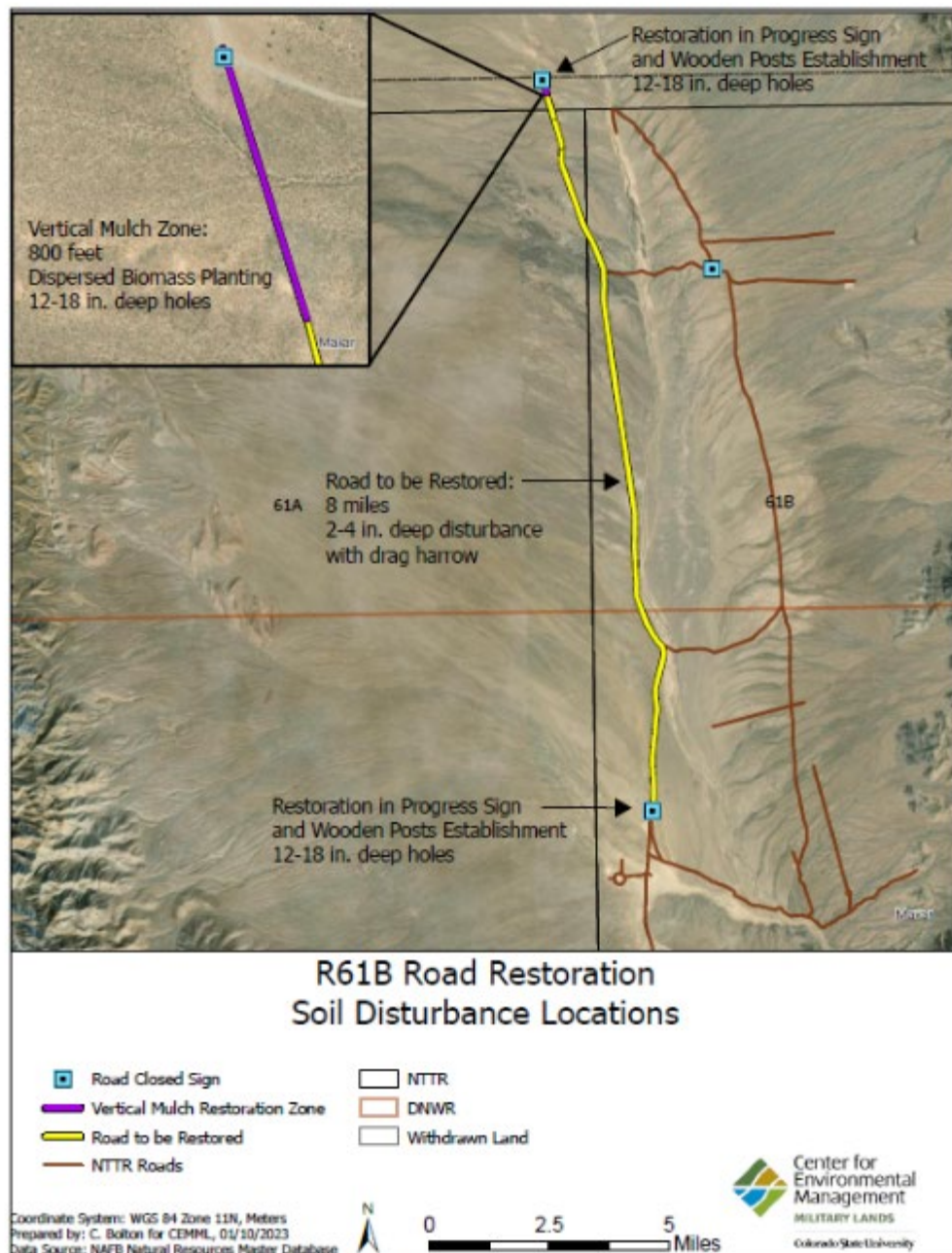
Contact ISAF AF Base Commander for  
clarification





- 
- Required for a federal action
  - Discovered that when road developed many decades earlier, cultural surveys not done
  - A small section of road was surveyed for cultural resources a few years earlier
  - Before we could go forward
    - The remaining 7 of 8 miles needed a cultural survey
    - Consultation with tribes and SHPO needed to be completed
  - The cultural requirements pushed project back 1-year

# Restoration Location on NTTR



*Enable Mission Success by Delivering Innovative Support*



# Preliminary Site Visit

---

- Aug 2021
- Participants: Nellis AFB, Desert NWR, BLM-WF Module Lead, CSU
- Evaluate soil compaction and soil drainage availability
- Discussed equipment needs/options
- Vegetation classification species list
- Restoration approaches
- Number and placement of road closure signage/barriers





Intermountain cold desert scrub  
*Yucca brevifolia* wooded scrub alliance





Intermountain shadscale saltbrush scrub  
*Grayia spinosa* scrub alliance





# Seed Mixture

## ■ Determined by Vegetation Classification

- Data is collected following a modified California Native Plant Society (CNPS) Rapid Assessment Survey Protocol

## ■ Seeds obtained from Comstock Seed

- Seed mix:

ANDERSON'S WOLFBERRY

SHADSCALE SALT BUSH (22%)

PEPPERGRASS

CHEESEBUSH

DESERT NEEDLEGRASS

INDIAN RICEGRASS (11%)

GALLETA GRASS (11%)

WHITE BURSAE (11%)

FOURWING SALT BUSH (11%)

WINTERFAT

PRINCE'S PLUME

DESERT GLOBEMALLOW

DESERT MARIGOLD

SIX WEEK FESCUE (11%)





# Equipment

---

- Water truck
- Bobcat with blade to smooth out berms, post hole digger
- ATV
- 2-Flat bed trailers
- Chain Harrow 6' with 4" tines
- Seed spreader for ATV
- Hand-held seed spreaders
- Shovels, pick mattock, rakes, hand saws, buckets



# Pre-project Tasks

---

- Within proximity of project, collect up to 10% of dead plant biomass such as shrub branches, litter, and Joshua tree limbs, as well as rock substrate material
  - Stage at the start of the roadway
- Submit a Dig Permit – required for any project if digging more than 2”
  - Surveys for underground utilities, fiber optic lines, etc
- Unexploded ordnance sweep of road and shoulders
- Stage equipment (bobcat)
- Signs
- Purchase supplies (signposts, wood posts, concrete, fuel...
- Desert tortoise clearance surveys













# Restoration Approach

---

## ■ Phase 1

- Level out-side some higher road berms and north road blocking berm
- De-compact the entire road using an ATV and chain harrow to de-compact soils down to 4"
- Broadcast seed blend within the roadway using an ATV with seed spreader
- Flip harrow to smooth side and drag along roadway to cover seeds to a shallow depth

















# Restoration Approach

---

## ■ Phase 2

- Used locally sourced materials to re-establish native habitat structure and reduce line-of sight for the first 800' of the northern end and 300' on the southern end of the roadway
- Determine landscape locations within the disturbed roadway to place the materials to give the area an integrated habitat appearance (i.e vertical and horizontal mulching)
- Dig holes 12-18 inches at select locations to “plant” the biomass to resemble live shrubs (vertical mulching)
- Arrange other dead biomass and rocks (horizontal mulching) to reduce the appearance of the roadway
- Hand broadcast the seed blend within the mulched area and gently rake the soils to incorporate the seeds



























# Restoration Approach

---

## ■ Phase 3

- Place 3 - “Road Closed Restoration in Progress” signs with wooden posts on either side of sign at the ends of the northern, southern, and northeast side bypass locations
  - To deter vehicular access in perpetuity
  - Holes dug by Bobcat with post hole digger



**ROAD CLOSED**  
**99 CES ROAD**  
**RESTORATION**  
**IN PROGRESS**







# Restoration Approach

---

- **Phase 5**
- Establish 2-paired comparative treatment monitoring plots adjacent to the disturbed roadway and on the roadway
- 10 x10 m<sup>2</sup>
- Document populations of non-native invasive species (NNIS) within the disturbed roadway for population fluctuations to determine if suppression efforts are necessary
- Biannual monitoring







**ROAD CLOSED**  
**99 CES ROAD**  
**RESTORATION**  
**IN PROGRESS**







# Questions

---

**Anna M Johnson**

**Nellis Natural Resource Program Manager**

**Nellis Air Force Base**

**[anna.johnson.18@us.af.mil](mailto:anna.johnson.18@us.af.mil)**

## **Special Thanks To:**

- **Colorado State University-Center for Environmental Management of Military Lands**
- **NTTR-Security, Scheduling, and Environmental Liaison, and EOD**
- **Desert National Wildlife Refuge**
- **Katy Gulley-US Forest Service**