



# Operational Range Assessment Whiteman Air Force Base Combat Arms Complex

Air Force Operational Range Assessment Program

January 2022

## Background

DoD uses and manages operational ranges to support national security objectives and maintain the high state of operational readiness essential to its mission requirements. The Department conducts non-regulatory, proactive, and comprehensive operational range assessments (ORAs) to support the long-term sustainability of these ranges while protecting human health and the environment. The purpose of an ORA is to determine if there is a release or substantial threat of a release of munitions constituents (MC) from an operational range to an off-range area that exceeds an applicable regulatory standard or creates a potential unacceptable risk to human health or the environment.

The USAF Operational Range Assessment Program (ORAP) assessment methodology uses an installation-wide approach to accomplish phased assessments to determine if MC are being transported to off-range areas and if such a release poses a risk to off-range receptors. An Air Force ORA is comprised of a primary Qualitative Assessment, Phase 1, and Quantitative Assessment, Phase 2, as required.

If an off-range release or substantial threat of release of MC is identified, further evaluation, a MC Migration / Mitigation Study, Phase 3, is conducted under the USAF ORAP. The study is focused on further characterizing site conditions, fully assessing risks, and evaluating mitigation measures. Based on findings of the MC Migration/Mitigation Study, a Mitigation Action, Phase 4, under the ORAP may be conducted if required.

## Installation Overview

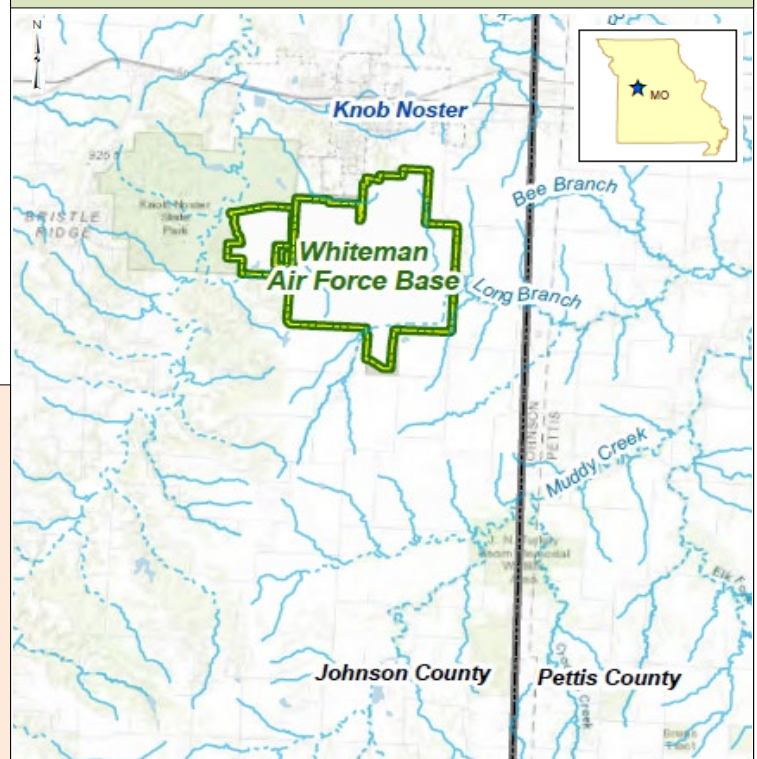
Whiteman Air Force Base (AFB) is located just south of Knob Noster, Missouri, approximately 9 miles east of the city of Warrensburg, Missouri. Whiteman AFB manages two geographically separated units: Limestone Defense Financial and Accounting Services Annex and Newington Defense Fuel Support Point.

## ORAP Findings: January 2022 ORA Report

- A MC Migration Study at the Combat Arms Complex was completed in June 2021.
- A Mitigation Action at the Combat Arms Complex was completed in January 2022.
  - Removal of on- and off-range lead impacted soils and a surface cleaning of the inactive Machine Gun Range's (MGR's) infrastructure surfaces was completed.
  - Confirmation sampling indicated lead-impacted soils were removed with remaining lead concentrations in soil were below RAOs.
- No further action is warranted at this time.

## Next Steps

The Combat Arms Complex is scheduled for periodic assessment in 5-years, or sooner, as part of the Whiteman AFB installation-wide ORA.



### Combat Arms Complex Assessment Overview

The CA Complex, in use since the 1940s, is located within the southwestern portion of Whiteman AFB and encompasses 3.19 acres. The CA Complex includes two subareas, an active indoor small arms range (SAR) and an inactive Machine Gun Range (MGR). The active SAR was inactive from March 2015 through Fall 2018 during which time the range was enclosed. The inactive MGR was made inactive in May 2014.

The 2020 periodic Quantitative ORA Phase 2 conducted at the Combat Arms Complex confirmed that MC were present in off-range soils, surface water, and sediment. The 2021 MC Migration Study, ORA Phase 3, verified an off-range MC release. MC metals (lead) were detected above the Whiteman AFB background value for lead in soil samples collected from the northern drainage ditch and southern off-range wet areas. Potential risks were identified for human receptors as MC (lead) were detected above the selected human health project action limit (PAL). No potential risks were identified for ecological receptors due to the lack of a receptor.

The 2021 ORA Phase 3 recommended a removal action with offsite disposal as hazardous or non-hazardous waste based on TCLP sampling as well as a surface cleaning of the inactive MGR's infrastructure surfaces be conducted.

A Mitigation Action, ORA Phase 4, was completed at the Combat Arms Complex in August 2021 in order to achieve recommended mitigation measures defined in the 2021 Phase 3:

- Minimize human exposure and interaction with MC for current and future base activities at/near the Combat Arms Complex.
- Reduce on-range concentrations of lead in surface soil below the human health PAL (260 milligrams per kilogram (mg/kg)).
- Reduce off-range concentrations of lead in surface and subsurface soil below the Whiteman AFB background value for lead (63.9 mg/kg).

### Assessment Overview Continued

To achieve MC mitigation objectives, lead impacted soils from on-range areas (within the active SAR's and inactive MGR's back berms, side berms, and nearby areas) and off-range areas (within the northern drainage ditch and southern off-range wet areas) were excavated and disposed off site. Soils were disposed as either hazardous or non-hazardous waste based on characterization sampling conducted under the Phase 3 ORA.

In addition, a surface cleaning of the inactive MGR to remove surface lead contamination from various infrastructure was conducted.

Following soil excavation, confirmation samples indicated remaining lead concentrations in soils were below their respective objectives, and the excavated areas were backfilled with installation borrow pit material and restored. Due to achievement of the goals, the Mitigation Action is deemed complete.

The Combat Arms Complex shall continue to be monitored and evaluated in 5 years as part of the Whiteman AFB installation-wide ORA. No other actions are required at this time.



**For more information on this assessment or the Air Force Operational Range Assessment Program contact the Ranges Subject Matter Expert, Technical Branch, Environmental Quality Directorate, Air Force Civil Engineer Center**  
**For more information on the DoD Operational Range Assessment Program visit <https://denix.osd.mil/orap/home/>**