# Operational Range Assessment
# Ellsworth Air Force Base

**Air Force Operational Range Assessment Program** June 2021

## 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 from an operational range to an off-range area that exceeds an applicable regulatory standard or creates a potential risk to human health or the environment.

The USAF Operational Range Assessment Program (ORAP), established to comply with DoD policy, sets forth procedures for consistently conducting ORAs throughout the Air Force. The USAF ORAP assessment methodology uses an installation-wide approach to verify the ORAP inventory and accomplish range-specific assessments. An Air Force ORA is comprised of two primary phases: Qualitative Assessment, Phase 1 and Quantitative Assessment, Phase 2 (if required).

- A Qualitative Assessment, Phase 1, encompasses records review, interviews, and a visual survey.
- A Quantitative Assessment, Phase 2, encompasses records review, interviews, visual survey, and environmental media sampling.

## Installation Overview

Ellsworth AFB is located 8 miles northeast of Rapid City, South Dakota, on the border of Meade and Pennington counties. Ellsworth AFB consists of approximately 5,245 acres. Ellsworth AFB manages the Powder River Training Complex (PRTC), a nearly 21.8-million-acre airspace extending over portions of North Dakota, South Dakota, Montana, and Wyoming to the northwest of the main base.

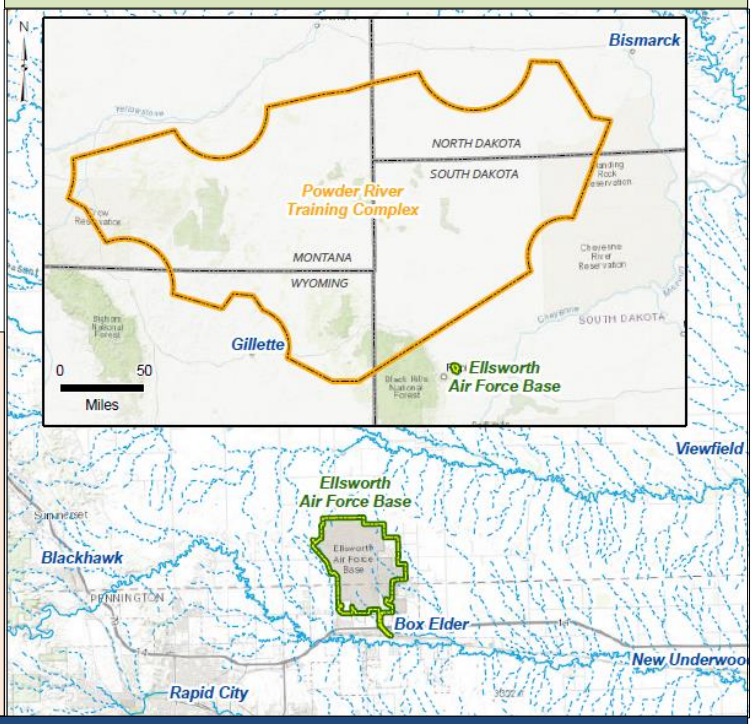
## ORAP Findings: June 2021 ORA Report

- Munitions Constituents (MC) including metals and explosives may be transported through soil (via runoff), surface water/sediment, and groundwater (discharge to surface water).
- No actual threat of an off-range MC release exists at any areas evaluated at Ellsworth AFB.
- No potential risks to human health or the environment were identified.

## Next Steps

Ellsworth AFB is scheduled to be assessed in accordance with USAF and DoD policy specifying periodic assessment at least every five years or sooner if significant changes occur that may impact assessment decisions.

- Due to possible MC migration, majority of areas are scheduled for Phase 2 assessments.



Installation Overview Continued

During implementation of the ORAP at Ellsworth AFB, four areas were determined to be eligible and assessed under the USAF ORAP – a Prime Base Engineer Emergency Force (BEEF) Training Area (TA), a Combat Arms Training and Maintenance (CATM) Facility, an Explosive Ordnance Disposal (EOD) Proficiency Training Range, and a Practice Grenade Range (GR).

This is the initial assessment of the Prime BEEF TA, the second assessment of the CATM Facility, and the third assessment of the EOD Proficiency Training Range and Practice GR.

Prime BEEF TA Assessment Overview

The area encompassing the Prime BEEF TA encompasses 12.63 acres. The range began operations in 1956 for expeditionary and field training exercises. This area was used in 2018 for a training activity during which blank small caliber ammunitions were expended. The Prime BEEF TA has been out of use since 2019 and training structures are under consideration for demolition.

In 2021, an initial Phase 1 ORA was completed for the Prime BEEF TA. The ORA concluded that MC deposition on the surface soil media at the Prime BEEF TA is limited. Therefore, it is unlikely for MC to be present in significant quantities to be available for transport via air, soil, surface water/sediment, or groundwater mechanisms. As such, no suspected threat of off-range MC release and no potential risks to off-range receptors were identified.

CATM Facility Assessment Overview

The CATM Complex encompasses 45.1 acres and has been used for live-fire small arms training since the 1960s. It contains an A Range (former Rifle/Pistol Range), B Range (Machine Gun Range), C Range (indoor Small Arms Range), Recreational Skeet Range, Shoothouse, and Conex Training Area.

In 2016, the initial Phase 1 ORA was completed for the CATM Facility. The 2016 ORA identified potential MC sources associated with the firing lines, target areas, and impact berms within the CATM Facility. Known/suspected MC included copper, lead, iron, tungsten (for frangible rounds), and zinc. The air, soil, surface water/sediment, and groundwater pathway were deemed incomplete. No threat of MC release or potential risks

CATM Facility Assessment Overview Continued

to off-range receptors were identified. Based on the conclusions of the Phase 1, it was recommended that the CATM Facility be re-evaluated in 5 years.

In 2021, a periodic Phase 1 ORA was completed for the CATM Facility. The ORA concluded that MC may have been deposited on the surface soil media at or near the historical impact berms within the CATM Facility. The air, soil, and surface water/sediment pathways were deemed incomplete. While soil conditions and climate limit vertical MC migration, infiltration to groundwater was deemed possible due to the shallow depth to groundwater. In addition, recent groundwater sampling data for MC was lacking to confirm the presence or absence of MC in downgradient groundwater. Therefore, a potentially complete exposure pathway was identified for groundwater (including groundwater discharge to surface water) to human and ecological receptors. The CATM Facility was recommended for an initial Phase 2 to evaluate the groundwater pathway.

EOD Proficiency Training Range Assessment Overview

The EOD Proficiency Training Range encompasses 22.70 acres and contains a detonation area within a 561-foot safety zone. The EOD Proficiency Training Range has been in use since 2001 for proficiency training.

In 2016, a periodic Phase 1 ORA was completed for the EOD Proficiency Training Range. The assessment identified potential sources of MC consisting of incompletely detonated ordnance at the detonation pit and within the SDZ. Known/suspected MC were identified as metals (lead) and explosives associated with detonation cords, blasting caps, demolition charges, and igniters used for proficiency training and emergency disposal. The air, soil, surface water/sediment, and groundwater pathways were deemed incomplete. Based on the conclusions of the Phase 1 ORA, the EOD Proficiency Training Range was recommended for a periodic Phase 1 re-evaluation in 5 years.

In 2021, a periodic Phase 1 ORA was completed for the EOD Proficiency Training Range. The ORA concluded that MC deposition has occurred on the surface soil media of the detonation area at the EOD Proficiency Training Range and to a lesser extent within the safety zone. The air and groundwater pathways were deemed incomplete.

EOD Proficiency Training Range Assessment Overview Continued

Potentially complete soil (via stormwater runoff) and surface water/sediment exposure pathways to ecological receptors were identified; however, pathways were deemed incomplete to human receptors. The EOD Proficiency Training Range was recommended for an initial Phase 2 to evaluate the soil and surface water/sediment pathways.

Practice GR Assessment Overview

The Practice GR encompasses 38.13 acres and contains an open range floor with an associated 500-meter surface danger zone (SDZ). The range is used for used for qualification and proficiency training with 40-millimeter practice rounds. The range was established in 1979 and may have historically been used for training with fragmentation grenades; however, there is no evidence of such use.

In 2016, the initial Phase 2 ORA for the Practice GR was conducted. This assessment included soil and groundwater sample collection. It was determined that the Practice GR contained a potential MC source located within the firing points, target/impact areas, and the SDZ.

Iron exceedances were detected in soil samples above screening levels and background concentrations. No exceedances of iron were detected in dissolved phase groundwater above drinking water standards. No other metals were detected at concentrations exceeding screening levels. NG and 2,4-dinitrotoluene (DNT) were detected in surface and subsurface soils from the firing point at concentrations that exceeded groundwater protection levels. However, neither NG or 2,4-DNT were detected in groundwater collected from a nearby monitoring well. No complete exposure pathways were identified. Based on the findings of the 2016 Phase 2 ORA, the Practice GR was recommended for a periodic Phase 2 re-evaluation in 5 years, or sooner if conditions change.

Practice GR Assessment Overview Continued

In 2021, a periodic Phase II ORA was conducted for the Practice GR. This assessment included the collection of soil samples from the range floor, sediment samples from downstream depressions, and groundwater samples from an on-range monitoring well. MC were detected (metals and NG) in surface and subsurface soils on the range floor; metals were detected above background concentrations. However, no MC were detected in on-range groundwater exceeding Project Action Limits and vertical migration model simulations indicated no current or projected impact to groundwater in the near future. Therefore, no MC were determined to be migrating off range and no potential risks to off-range receptors were identified. The Practice GR was recommended for a periodic Phase 2 in five years, or sooner if conditions change.

**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/**