



EA Engineering, Science, and Technology, Inc.

## **FINAL OPERATIONAL RANGE ASSESSMENT PROGRAM REPORT SEAGOVILLE LOCAL TRAINING AREA, TEXAS**

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To meet Department of Defense requirements and support the U.S. Army's Sustainable Range Program, the Army is conducting the Operational Range Assessment Program (ORAP) to determine whether a release or substantial threat of release of munitions constituents of concern (MCOC) from an operational range to an off-range area creates a potentially unacceptable risk to human health or the environment. The initial ORAP assessment (Phase I) is a qualitative evaluation of whether: (1) a MCOC source existed on the operational range footprint, (2) there is a potential migration mechanism, and (3) human or sensitive ecological receptors are present. Conclusions from the Phase I place each operational range into one of two categories: Unlikely or Inconclusive. Operational range areas categorized as "Unlikely" are those where there is sufficient evidence to show that there are no known releases or source-receptor interactions that could present an unacceptable risk to human health or the environment based on a review of the information available; no further action needs to be taken for these ranges at this time and the installation is placed into a periodic 5-year review cycle. Operational range areas categorized as "Inconclusive" are those where existing information either is insufficient to make a source-receptor interaction determination or indicates the potential for such interaction to be occurring. Sites with ranges categorized as Inconclusive are recommended for further evaluation by conducting an ORAP Phase II assessment.

Initially, the ORAP Phase II establishes whether the source-receptor pathway identified during Phase I is complete or new information has been identified that would impact the Phase I's conclusions. To determine whether MCOC are potentially leaving an operational range footprint by an identified pathway (e.g., groundwater or surface water) and pose a potential risk to offsite receptors, the Phase II considers existing and any new sampling data. This ORAP Phase II Report presents an evaluation of source-receptor pathways at Seagoville Local Training Area (LTA), Texas.

Seagoville LTA is located in northeastern Texas, approximately 17 miles southeast of Dallas, in Dallas County. The operational range complex at the installation encompasses 198.37 acres, with 12 maneuver and training areas totaling 193.93 acres and one small arms firing range encompassing 4.44 acres. The non-operational area on the installation consists of 37.86 acres. In 2008, the ORAP Phase I Qualitative Assessment for Seagoville LTA determined that only the 4.44-acre small arms firing range be categorized as Inconclusive. Based on munitions usage at the small arms firing range, the primary MCOC consist of metals (i.e., antimony, copper, lead, and zinc). The MCOC at the Inconclusive range have the potential to be transported to off-range areas by various environmental media, including surface soil/sediment (erosion), surface water, and groundwater. Surface water in the area of the Inconclusive range is discharged to a catchment pond located off-installation via a surface water drainage system at the small arms range. Surface water may also percolate through soils to the underlying Woodbine Aquifer and flow towards, and discharge into, the catchment pond. There are no human receptors within the vicinity of the Inconclusive range as there are no groundwater wells located downgradient. The catchment pond is also not a drinking water supply and recreational activities are prohibited. Potential ecological receptors include off-range Federal and State listed threatened and endangered species (for example the interior least tern, American alligator, and Texas horned lizard), sensitive environments such as habitat for threatened and endangered species, and wetlands located off the operational complex along the intermittent stream draining to the catchment pond and wetlands at the catchment pond.

In May and June 2011, EA conducted the initial Phase II (Initial Investigation) field sampling events for the small arms range. In response to the analytical results of the Initial Investigation, an Expanded Investigation was conducted in July and August 2012.

During the Phase II Quantitative Assessment, the Initial Investigation surface water and sediment sampling was conducted at an off-range (on-installation) discharge location downstream of the Inconclusive firing range and one upstream reference location. Due to the ephemeral nature of the downstream location and the intermittent nature of the reference location, collections were made via a 2-hour composite sample during rain events throughout the wet season. A total of three samples were collected from each sampling location. No benthic macroinvertebrate samples were collected due to the lack of viable habitat for macroinvertebrate organisms at the sample sites. The Expanded Investigation followed the same protocol as the Initial Investigation; however, the off-range discharge location downstream of the Inconclusive firing range was moved downstream to a location where stormwater runoff from the Inconclusive area exits the installation. This modification was made so that sampling results from the Expanded Investigation would more accurately represent potential MCOC migrating off-installation as well as provide a location in which the aquatic habitat at the sample site would satisfy the requirements for a Screening Level Ecological Risk Assessment (SLERA), if necessary. The reference location remained the same as during the Initial Investigation.

Surface water and sediment samples from both investigations were collected and analyzed for metals. Matrix-specific analytes included hardness and water quality parameters (pH, temperature, conductivity, oxidation-reduction potential, and dissolved oxygen) for surface water and total organic carbon in sediment. Sediment samples were also analyzed for simultaneously extracted metals/acid-volatile sulfides (SEM/AVS). Sample results were compared to reference concentrations and to applicable freshwater ecological screening levels. For surface water and sediment, sample concentrations were screened against reference using the Student's t-test and against ecological screening levels using a 95 percent upper confidence limit of the mean (UCLM) of the sample concentrations.

During the Initial Investigation, the 95 percent UCLM of copper and lead in surface water exceeded associated ecological screening levels; however, the average downstream surface water concentrations were not statistically higher than average reference concentrations. There were no exceedances of metals MCOC in sediment. The Initial Investigation data indicated a potential for copper and lead to migrate off-range via surface water at concentrations that may pose a risk to the environment. Due to the ephemeral nature of the downstream location, which did not provide suitable aquatic habitat to support a Screening Level Ecological Assessment, and its position inside the installation boundary, the Initial Investigation sample results did not provide enough conclusive evidence to complete the Phase II Assessment. Therefore, an Expanded Investigation was conducted.

For samples collected during the Expanded Investigation, the 95 percent UCLM surface water concentrations for copper and lead exceeded the associated freshwater ecological screening level; however, the average downstream surface water sample concentrations were not statistically higher than the average reference concentrations. Sediment sample results showed that there were no exceedances of metals MCOC.

To assist in the assessment of the nature and extent of potential ecological risk from the MCOC detected downstream of the small arms range, a SLERA was performed. The SLERA provides an assessment of risks based on a qualitative weight of evidence approach using metals sampling results from the Phase II Quantitative Assessment.

The results of Seagoville LTA's ORAP Phase II Quantitative Assessment indicate that migration of lead and copper from the small arms range has occurred, as indicated by screening level exceedances at the downstream sampling location. However, the SLERA indicated that MCOC concentrations detected in the Initial and Expanded investigation sampling locations are not expected to have a potential for risks to benthic, aquatic, or piscivorous ecological receptors. Based on the conclusions drawn from the SLERA, MCOC concentrations migrating off-range are not expected to present an unacceptable risk to downstream ecological receptors. Therefore, the small arms range categorized as Inconclusive during the Phase I and assessed under this Phase II, has been re-categorized as Unlikely and placed into the ORAP periodic review program (**Figure 1**).

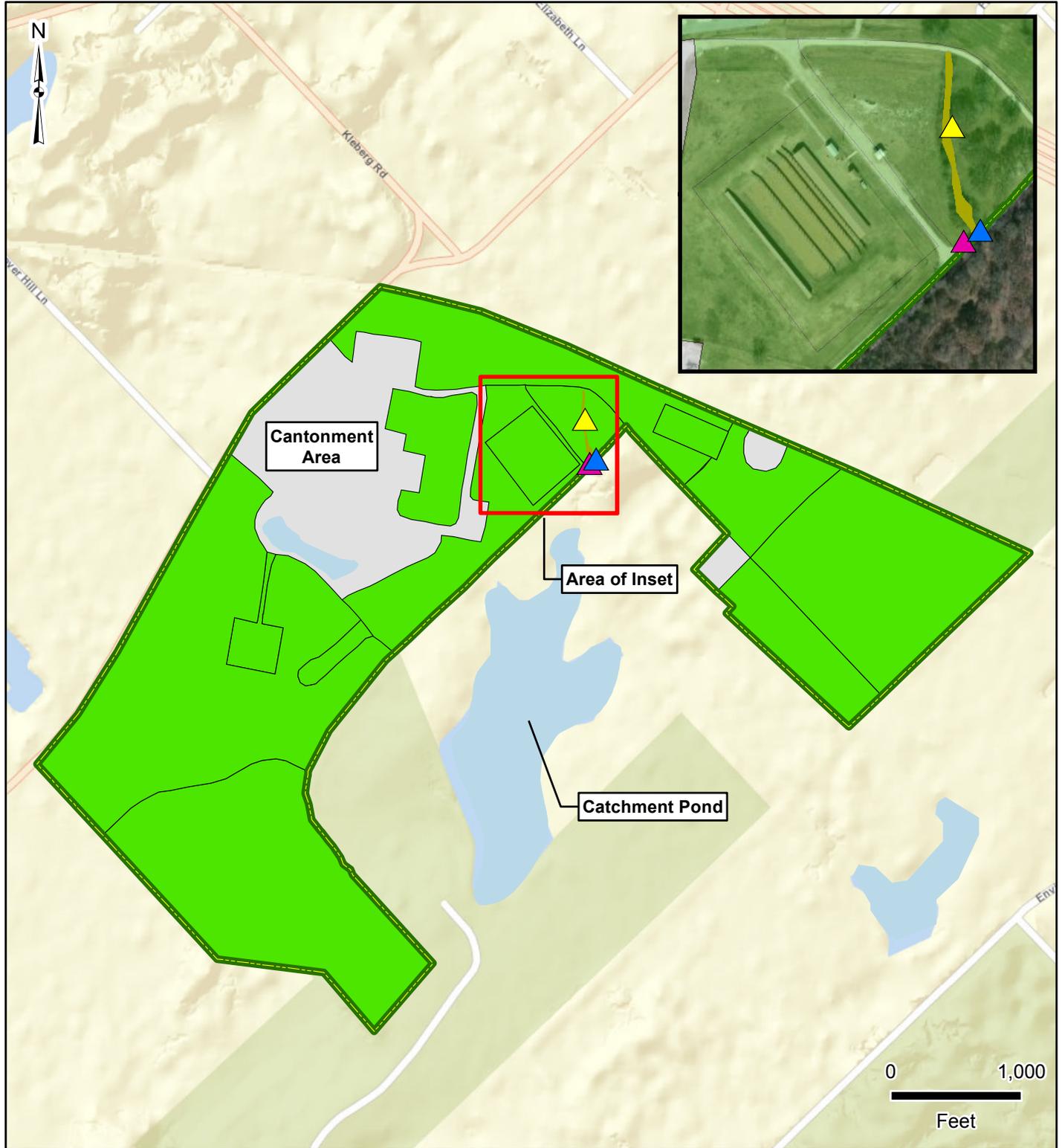
Based on the results of the Phase II Assessment, to help mitigate potential future migration of MCOC, Seagoville LTA would benefit from the implementation of Best Management Practices to potentially avoid impacts of MCOC migrating off-installation.



Operational Range Assessment Program  
Phase II Quantitative Assessment  
Seagoville LTA, TX



Figure 1  
Phase II Summary



**Installation Data**  
 Installation Boundary  
 Non-Operational Area

**Range Category**  
 Unlikely

**Sample Locations**  
 Background Sample  
 Initial Investigation (2011)  
 Expanded Investigation (2012)

**Hydrology**  
 Waterbody  
 Wetland

Data Sources:  
ARID-GEO 2008  
ArcGIS Online 2012

Date: .....April 2013  
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