

**FINAL
OPERATIONAL RANGE ASSESSMENT PROGRAM
PHASE I QUALITATIVE ASSESSMENT REPORT
VOLUNTEER TRAINING SITE-CATOOSA
TUNNEL HILL, GEORGIA**

MARCH 2008

Prepared for:

UNITED STATES ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
P.O. Box 1715
Baltimore, Maryland 21203

and

UNITED STATES ARMY ENVIRONMENTAL COMMAND
Aberdeen Proving Ground, Maryland 21010

Prepared by:

MALCOLM PIRNIE, INC.
1300 E. 8th Avenue
Suite F100
Tampa, Florida 33605



EXECUTIVE SUMMARY

The United States (U.S.) Army is conducting qualitative assessments at operational ranges to meet the requirements of Department of Defense policy and to support the U.S. Army Sustainable Range Program. The operational range qualitative assessment (hereinafter referred to as Phase I Assessment) is the first phase of the U.S. Army Operational Range Assessment Program. This Phase I Assessment evaluates the operational range area at Volunteer Training Site (VTS)-Catoosa to assess whether further investigation is needed to determine if potential munitions constituents of concern (MCOC) are or could be migrating off-range at levels that may pose an unacceptable risk to human health or the environment. In conducting the Phase I Assessment, MCOC sources, potential off-range migration pathways, and potential off-range human and ecological receptors are evaluated as appropriate.

VTS-Catoosa, occupying approximately 1,612 acres, is located in Catoosa County, Georgia, two miles east of Ringgold, Georgia, and 13 miles east of Fort Oglethorpe, Georgia. Georgia State Highway 2 borders VTS-Catoosa on the south, and Salem Valley Road accesses the northern boundary. The site is approximately 16,000 feet at its maximum length by approximately 6,625 feet at its maximum width. The U.S Army Corps of Engineers owns VTS-Catoosa and, although it is located in the state of Georgia, the installation is licensed for use to the Tennessee Army National Guard (ARID-GEO, 2007; Snyder, 2001).

As part of the Operational Range Inventory Sustainment, an update to the Army Range Inventory Database-Geodatabase (ARID-GEO) was submitted to the U.S. Army Environmental Command in April 2007. The ARID-GEO (2007) identified 35 operational range areas. However, based on interviews conducted during the site visit, it was determined that there are 52 operational range areas encompassing approximately 1,530 acres. Training activities conducted at VTS-Catoosa include the use of scaled ranges (mortar, artillery, and tank), small arms ranges (familiarization and qualifications), and training and maneuver areas.

According to munitions data collected during the Phase I Assessment, the types of munitions currently and historically fired at VTS-Catoosa are limited to small caliber munitions and practice medium caliber munitions. Potential MCOC associated with these munitions types include lead, antimony, copper, and zinc. MCOC sources have been identified for 24 ranges, including a grenade launcher range, two impact areas (including 12 fixed target areas), and nine small arms ranges. In general, MCOC from primary source areas potentially impact soil (e.g., impact berms, impact areas near targets). Release mechanisms for soil may include leaching from soil to groundwater or erosion and runoff to off-range surface soil or to nearby streams. Once potential MCOC are deposited in surface water / sediment, they have the potential to migrate downstream, recharge the shallow groundwater, or be taken up by aquatic plants or animals.

Three of the nine small arms ranges were identified to have covered berms, covered firing lines, baffles, and lateral walls. The design of these ranges virtually eliminates migration of MCOC due to precipitation-related erosion or leaching. Potential MCOC at the remaining small arms ranges and the impact areas (including fixed target areas) would be concentrated within the impact berms. Migration of MCOC from these berms is unlikely due to the presence of dense grass and shrubby vegetation. These ranges drain to Tiger Creek, which eventually flows into the East Chickamauga Creek and South Chickamauga Creek. A water quality assessment was conducted for VTS-Catoosa during the fall (dry) and spring (wet) seasons in 1997/1998. Lead was not detected in any of the 10 samples from the fall 1997 sampling event, but was detected at 3.0 to 5.0 micrograms per liter ($\mu\text{g/L}$) in four

samples from the spring 1998 sampling event. Lead was not detected above the laboratory reporting limit in the most downstream sample collected within Tiger Creek (the point where Tiger Creek exits the installation). Therefore, no release mechanisms that enable transport of potential MCOC from soil source areas toward off-range receptors were identified for the grenade launcher range, the impact areas (include fixed target areas), or the small arms ranges. Thus, no release mechanisms that enable transport of potential MCOC from soil source areas toward off-range receptors were identified for the ranges where potential MCOC may be present at VTS-Catoosa.

Pyrotechnics use at VTS-Catoosa is infrequent. VTS-Catoosa usage from 1996 through 2001 was approximately 621 soldiers per week (with a daily maximum of 1,568 soldiers) and training areas are used approximately two weekends per month. However, since 2001 the frequency of training at VTS-Catoosa has decreased due to deployment. Spent munitions items are removed at the conclusion of training activities. Based on the size of the training and maneuver areas where pyrotechnics are used (approximately 500 acres), the infrequent use of pyrotechnics (two weekends per month), and the removal of associated debris following training exercises, limited or no MCOC sources are expected within the training and maneuver areas. Therefore, it is unlikely that a significant source of perchlorate exists at VTS-Catoosa.

Due to infrequent current and historical use of munitions, limited or no MCOC sources were identified at the following:

- One demolition range (used approximately four to five times within the past 15 years by local law enforcement)
- Five field training activity areas (no current or historical munitions use)
- Seven firing points (used up to six weekends per year prior to 2003; no munitions use since 2003)
- Three observation points (no current or historical munitions use)
- Two multiple use areas.

The 52 operational ranges at VTS-Catoosa are categorized as Unlikely.

Unlikely – Five-Year Review

Fifty-two ranges at VTS-Catoosa are categorized as Unlikely, totaling 1,530 acres. These ranges consist of a demolition range, field training activities areas, fixed firing points, a grenade launcher range, impact areas (including fixed target areas), multiple use ranges, observations points, small arms ranges, and training and maneuver areas. Ranges where, based upon a review of readily available information, there is sufficient evidence to show that there are no known releases or source-receptor interactions off-range that could present an unacceptable risk to human health or the environment are categorized as Unlikely. Ranges categorized as Unlikely are required to be re-evaluated at least every five years. Re-evaluation may occur sooner if significant changes (e.g., change in range operations or site conditions, regulatory changes) occur that affect determinations made during this Phase I Assessment, **Table ES-1** summarizes the Phase I Assessment findings.

Table ES-1: Summary of Findings and Conclusions for VTS-Catoosa

Category	Total Number of Ranges and Acreage	Source(s)	Pathway(s)	Human Receptors	Ecological Receptors	Conclusions and Rationale
Unlikely	52 operational ranges; 1,530 acres	Soil (berm and surface soil) at the small arms ranges, two impact areas (including 12 fixed target areas), and one grenade launcher range	None	Not evaluated (no release mechanisms or pathways identified)		Re-evaluate during the five-year review. No pathway / release mechanism was identified.
		Limited or no source—limited or no live-fire munitions use	Not evaluated (limited or no source identified)		Re-evaluate during the five-year review. Limited or no source was identified.	

ABBREVIATIONS/ACRONYMS

amsl	Above Mean Sea Level
ARID-GEO	Army Range Inventory Database-Geodatabase
bgs	Below Ground Surface
cal	Caliber
CCC	Criterion Continuous Concentration
CSM	Conceptual Site Model
DNT	Dinitrotoluene
DoD	Department of Defense
DODI	Department of Defense Instruction
E	Ecological receptors identified. (This refers to range grouping; pathway designation always precedes E designation.)
GAARNG	Georgia Army National Guard
GNHP	Georgia National Heritage Program
GW	Groundwater pathway identified. (This refers to range grouping; M designation always precedes GW designation.)
H	Human receptors identified. (This refers to range grouping; pathway designation always precedes H designation.)
HMX	Cyclotetramethylenetetranitramine
HUC	Hydrologic Unit Code
JFHQ-TN	Joint Forces Headquarters-Tennessee
KD	Known Distance
LS	Limited Source
M	Munitions used. (This refers to range grouping; M designation always precedes applicable pathway.)
MCOC	Munitions Constituents of Concern
mm	Millimeter
NG	Nitroglycerin
NRAS	Natural Resource Aquatic Survey
ORAP	Operational Range Assessment Program
PU	Pathway unlikely or incomplete. (This refers to range grouping; M designation always precedes PU designation.)
RBP	Rapid Bioassessment Protocol
RDX	Cyclotrimethylenetrinitramine
RFMSS	Range Facility Management Support System
SW	Surface water pathway identified. (This refers to range grouping; M designation always precedes SW designation.)
TNARNG	Tennessee Army National Guard
TNT	Trinitrotoluene
U.S.	United States
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAEC	United States Army Environmental Command
USEPA	United States Environmental Protection Agency
USFWS	United State Fish and Wildlife Service
VTS	Volunteer Training Site

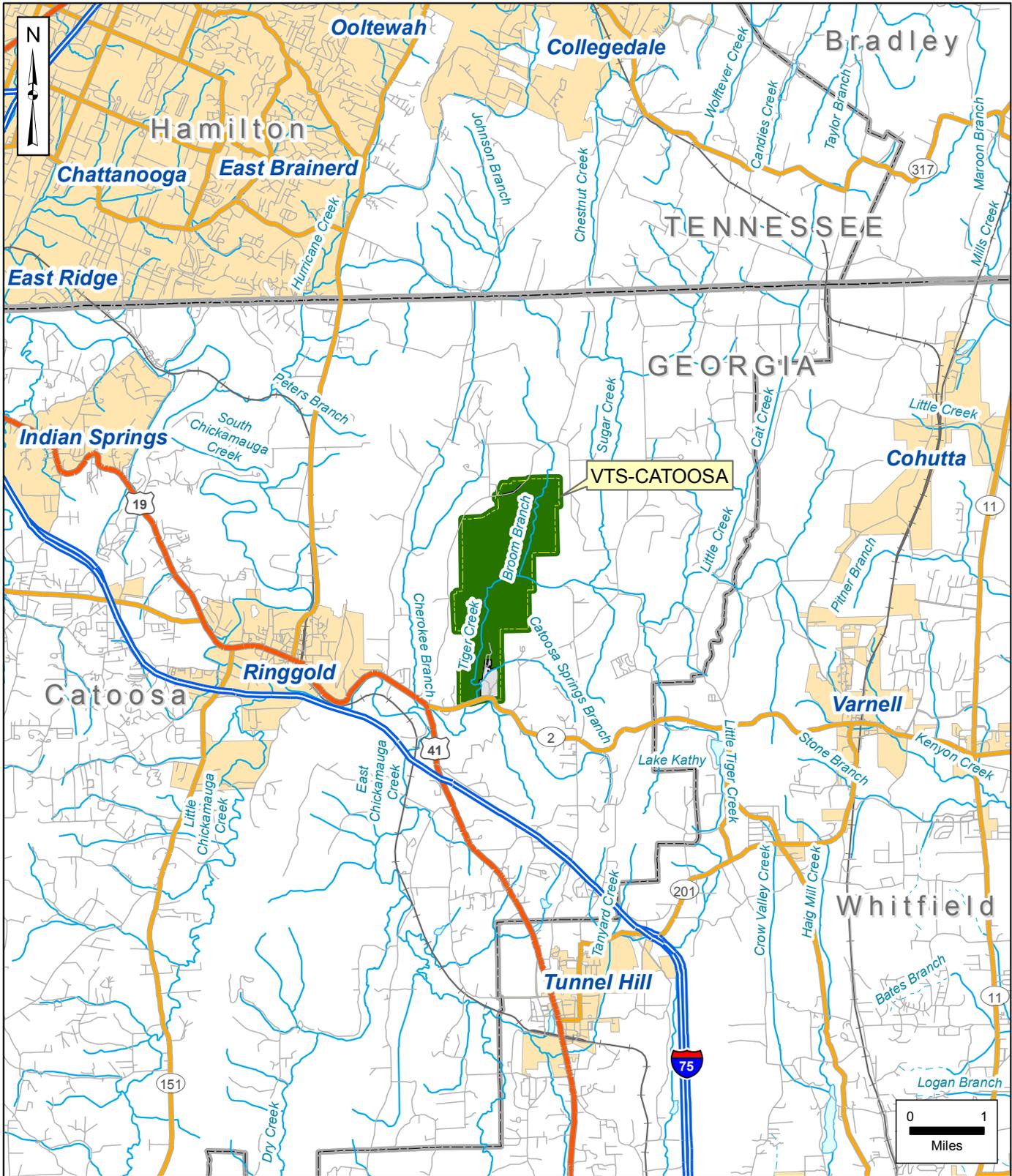
WWI	World War I
WWII	World War II
°F	Degrees Fahrenheit
µg/L	Micrograms per Liter



**MALCOLM
PIRNIÉ**

**Operational Range Assessment Program
Phase I Qualitative Assessment
VTS-Catoosa, GA**

**Figure 1-1
General VTS-Catoosa Location**



Installation

- Installation Boundary
- Operational Area
- Other than Operational Area

Hydrology

- River/Stream (Perennial)
- Stream (Intermittent)
- Water Body

Transportation/Administrative

- Interstate
- Highway
- Major Road
- Local Road
- County Boundary
- State Boundary

Data Sources:
AEC, ARID-GEO, 2007
ESRI, StreetMap USA, 2005

Date: March 2008
Prepared By: Malcolm Pirnie, Inc.
Prepared For: U.S. Army
Contract: W912DR-05-D-0004