

**FINAL
OPERATIONAL RANGE ASSESSMENT PROGRAM
PHASE I QUALITATIVE ASSESSMENT REPORT
WELDON SPRING LOCAL TRAINING AREA
WELDON SPRING, MISSOURI**

MAY 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.
3101 Wilson Boulevard
Suite 550
Arlington, Virginia 22201

The logo for Malcolm Pirnie, Inc. consists of the words "MALCOLM" and "PIRNIE" stacked vertically in a bold, white, sans-serif font. The text is centered within a solid black rectangular background.

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 (ORAP). This Phase I Assessment evaluates the operational range area at Weldon Spring Local Training Area (LTA) 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.

Weldon Spring LTA encompasses 1,707.6 acres of federally owned land in east-central Missouri, approximately 30 miles west of downtown St. Louis (Burns & McDonnell, 2007). The operational range footprint of the installation has remained mostly unchanged since training began in 1959. According to the Army Range Inventory Database-Geodatabase (ARID-GEO), there are currently 14 operational ranges at Weldon Spring LTA (ARID-GEO, 2007). These ranges occupy 1,590 acres and consist of 10 training and maneuver areas, three non-dudded impact areas, and one firing range. The total operational range area was derived from the Operational Use Area (total range area) acreage as reported in ARID-GEO (2007). Training and maneuver areas, such as bivouacs, land navigation courses, and combat engineer equipment areas, are located in the central and eastern portions of Weldon Spring LTA. The small arms range is located in the southwest corner of the installation and is surrounded by three non-dudded impact areas.

The only MCOC source identified at Weldon Spring LTA is the impact berm associated with the small arms range. In general, MCOC from primary source areas potentially impact the soils in the small arms range impact berm. MCOC source areas in the three non-dudded impact areas surrounding the small arms range are unlikely because these areas are used primarily as a safety zone for the small arms range, and land navigation training. The small arms range is constructed with a series of horizontal and vertical baffles, as well as steep embankments along the east and west boundaries extending from the firing points to the impact berm that prevent errant fire aimed high or horizontally left or right from leaving the range. The only possible fire that could leave the small arms range and land in one of these non-dudded impact areas is ricochet from low-aimed shots. The number of such rounds reaching the non-dudded impact areas is likely very low and is not expected to be of sufficient quantity or concentrate in any one area to constitute a potential MCOC source.

MCOC can be released to surface water / sediment (downstream) via a variety of release mechanisms. Release mechanisms for soil may include 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 or be taken up by aquatic plants or animals. Release mechanisms for surface water / sediment are natural stream flow and sediment transport. Drainage from the base of the berm at the small arms range at Weldon Spring LTA is directed into a closed, plastic-lined storm water system that discharges directly into an unnamed tributary to Little Femme Osage Creek, which flows into Femme Osage Creek and the Missouri River.

No potential human receptors were identified for Weldon Spring LTA that could be exposed to an unacceptable risk due to potential MCOC exposure. The main ecological receptors are sensitive environments and threatened and endangered species located off-installation and downstream in Little Femme Osage Creek and its tributaries, Femme Osage Creek, and the Missouri River. Based on

sampling data, the ecological receptors are not likely being exposed to MCOC at concentrations considered to pose an unacceptable risk.

The 14 operational ranges at Weldon Spring LTA are categorized as Unlikely.

Unlikely – Five-Year Review

Fourteen ranges at Weldon Spring LTA are categorized as Unlikely, totaling 1,590 acres. These ranges consist of training and maneuver areas, a small arms range, and non-dusted impact 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.

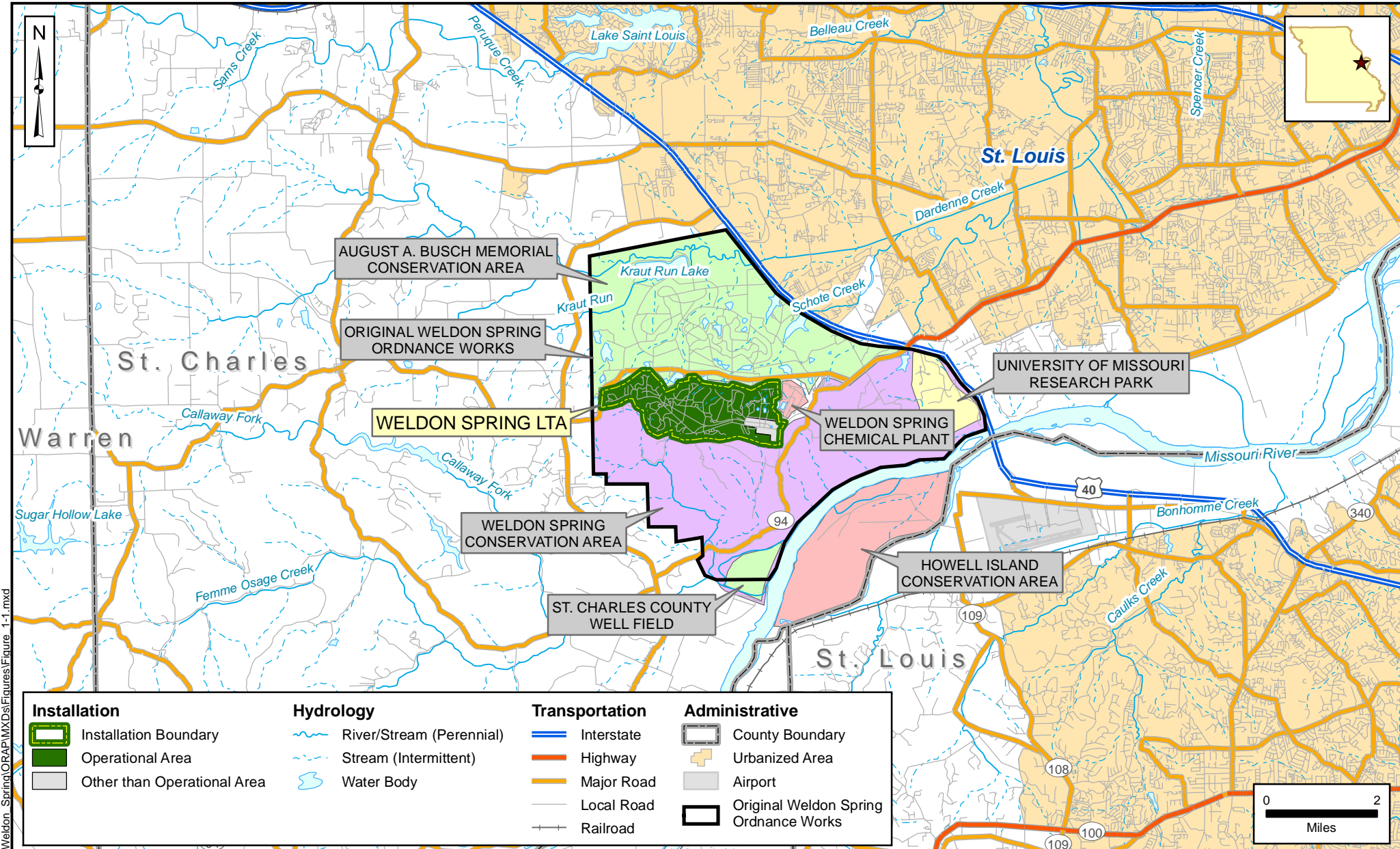
Table ES-1 summarizes the Phase I Assessment findings.

Table ES-1: Summary of Findings and Conclusions for Weldon Spring LTA

Category	Total Number of Ranges and Acreage	Source(s)	Pathway(s)	Human Receptors	Ecological Receptors	Conclusions and Rationale
Unlikely	One operational range; 4.24 acres	Impact berm at small arms range	Storm sewer system, unnamed tributaries to Little Femme Osage Creek exiting the southwest portion of the installation, Little Femme Osage Creek, Femme Osage Creek, and the Missouri River	None	Sensitive environments (wetlands) and threatened and endangered species downstream along the Little Femme Osage Creek, Femme Osage Creek, and Missouri River	Re-evaluate during the five-year review. Negative sampling data indicates ecological receptors downstream are not being exposed to MCOC concentrations that pose an unacceptable risk.
	13 operational ranges; 1,585.76 acres	Limited or no source—limited or no military munitions use	Not evaluated (limited or no source was identified)			Re-evaluate during the five-year review. Limited or no source was identified.

ABBREVIATIONS/ACRONYMS

ARID-GEO	Army Range Inventory Database-Geodatabase
bgs	Below Ground Surface
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.)
FBI	Federal Bureau of Investigation
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.)
LS	Limited Source
LTA	Local Training Area
M	Munitions used. (This refers to range grouping; M designation always precedes applicable pathway.)
MCOC	Munitions Constituents of Concern
MDC	Missouri Department of Conservation
mg/kg	Milligrams per Kilogram
mm	Millimeter
N/A	Not Applicable
NG	Nitroglycerin
NPL	National Priorities List
ORAP	Operational Range Assessment Program
PU	Pathway unlikely or incomplete. (This refers to range grouping; M designation always precedes PU designation.)
RRC	Regional Readiness Command
RCRA	Resource Conservation and Recovery Act
RFMSS	Range Facility Management Support System
RRC	Regional Readiness Command
SW	Surface water pathway identified. (This refers to range grouping; M designation always precedes SW designation.)
T/E	Threatened and Endangered
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
USGS	United States Geological Survey
WSOW	Weldon Spring Ordnance Works
WWII	World War II
°F	Degrees Fahrenheit



**Operational Range Assessment Program
Phase I Qualitative Assessment
Weldon Spring LTA, MO**

**Figure 1-1
General Weldon Spring LTA Location**

Data Sources:
AEC, ARID-GEO, 2006
ESRI, StreetMap USA, 2005

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



S:\Projects\ARMY\Installations\Weldon_Spring\ORAP\MXD\Figures\Figure_1-1.mxd