FINAL
Operational Range Assessment Program Phase I Qualitative Assessment Report Blossom Point Research Facility, Maryland

U.S. Army Operational Range Assessment Program Qualitative Operational Range Assessments

Prepared for:
U.S. Army Environmental Command and
U.S. Army Corps of Engineers Baltimore District

Printed on recycled paper

September 2008

ABBREVIATIONS/ACRONYMS

ARID-GEO	Army Range Inventory Database-Geodatabase
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTT	Closed, Transferred, and Transferring
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.)
GOCO	Government-Owned, Contractor-Operated
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.)
HE	High Explosives
HMX	Cyclotetramethylenetetranitramine
LS	Limited Source
M	Munitions used. (This refers to range grouping; M designation always precedes applicable pathway.)
MCOC	Munitions Constituents of Concern
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MMRP	Military Munitions Response Program
NG	Nitroglycerin
OB/OD	Open Burn / Open Detonation
ORAP	Operational Range Assessment Program
PETN	Pentaerythritoltetranitrate
PU	Pathway unlikely or incomplete. (This refers to range grouping; M designation always precedes PU designation.)
RDX	Cyclotrimethylenetrinitramine
RFMSS	Range Facility Management Support System
SW	Surface water pathway identified. (This refers to range grouping; M designation always precedes SW designation.)
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 States Fish and Wildlife Service
USGS	United States Geological Survey
UXO	Unexploded Ordnance
WP	White Phosphorus
°F	Degrees Fahrenheit

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 Blossom Point Research Facility 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, potential MCOC sources, potential off-range migration pathways, and potential off-range human and ecological receptors are evaluated as appropriate.

Blossom Point Research Facility is a U.S. Army research and development facility in Charles County, Maryland located approximately 50 miles south of Washington, D.C, and 10 miles southwest of La Plata, Maryland. As part of the Operational Range Inventory Sustainment, an update to Army Range Inventory Database-Geodatabase (ARID-GEO) was submitted to the U.S. Army Environmental Command in March 2006 (ARID-GEO, 2006). The ARID-GEO (2006) identified an operational range area encompassing 1,572.63 acres comprised of seven operational ranges, and a non-operational use area of 26.51 acres at Blossom Point Research Facility. Two adjustments to the range complex were noted during the site visit. Facility personnel identified an additional open burn / open detonation (OB/OD) area encompassing 4.13 acres in the southeast corner of the facility and co-located within the maneuver and training area. In addition, 17.49 acres had also been reallocated as non-operational range areas. Three acres of the largest range area had been reclassified as a second non-operational area, and 14.49 acres of the same range area were added to the original non-operational area identified in the ARID-GEO (2006) (U.S. Army Adelphi Laboratory Center, Environmental Engineer, pers comm.). Based on these adjustments, the operational range complex now consists of eight ranges, encompassing 1,555.14 acres and two non-operational areas totaling 44 acres. The current operational range layout includes a small caliber range, an observation tower, an indirect firing range, an impact area, an acoustic and optical test area, two OB/OD areas, and a maneuver and training area.

Blossom Point Research Facility was established in 1942 as a national defense facility with the mission of testing small, experimental proximity fuzes and fuze components. In 1975, the facility was closed due to a rapid decline in munitions testing. Since reopening in 1980, the facility has conducted explosives research and development studies, acoustic and optical research, developed mine clearing systems, refined target acquisitions technology, and developed personnel and equipment detection devices (ARID-GEO, 2006).

Primary MCOC source areas identified at Blossom Point Research Facility are from historical firing activities within the boundaries of all eight current operational ranges. Current munitions use involves the limited use of live-fire munitions and does not constitute a primary source. In general, MCOC primary source areas historically impacted the following source media: (1) soil (e.g., impact berms, impact areas surrounding targets, burn pits), and (2) surface water / sediment (e.g., direct deposition into streams and wetlands).

MCOC can be released from source media to surface water / sediment and groundwater via a variety of release mechanisms. Release mechanisms for soil may include soil erosion and runoff to off-range surface soil or to nearby streams and rivers. Once potential MCOC are deposited in surface water / sediment, they have the potential to migrate downstream. In addition, there are historical munitions

dudded below ground surface throughout the facility that may potentially be leaching MCOC from soil to groundwater resources which exit the boundaries of the facility.

The primary human receptors identified at Blossom Point Research Facility are fishermen and duck hunters in off-range surface water bodies (i.e., the Potomac River or Nanjemoy Creek) downstream of the facility. The primary potential ecological receptors identified at the facility are a pair of Bald Eagles that have an off-range nest site within 0.5 miles of the northeast corner of the facility boundary. However, based on the limited use/access for human receptors in shoreline areas as well as the volume of water in the Potomac River and Nanjemoy Creek and the high flow rates of these water bodies in relation to the minimal volume and flow of water exiting the facility it is unlikely that potential MCOC would interact with human or ecological receptors located down gradient of the facility.

The eight operational ranges at Blossom Point are categorized as Unlikely.

Unlikely – Five-Year Review

Eight ranges at Blossom Point Research Facility are categorized as Unlikely, totaling 1,555.14 acres. These ranges consist of a small caliber range, an acoustic and optical test area, two OB/OD areas, an observation tower, an impact area, an indirect firing range, and a maneuver and training area. 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 Blossom Point Research Facility

Category	Total Number of Ranges and Acreage	Group Identification	Source(s)	Pathway(s)	Human Receptors	Ecological Receptors	Conclusions and Rationale
Unlikely	3 ranges; 1,479.98 acres	MSW (H/E) GW (H/E)	Historical firing and impact of medium and large caliber munitions, and historical use of pyrotechnics and obscurants	Surface water and groundwater exiting to the surrounding rivers	Recreational users in the Potomac River and Nanjemoy Creek	Bald Eagles nesting within 0.5 miles of the facility's northeast boundary	Re-evaluate during the five-year review. The receptors identified are not affected by potential MCOC based on limited exposure, analytical data, and range effluent volume.
Unlikely	5 ranges; 75.16 acres	MGW (H/E)	Historical firing and impact of medium and large caliber munitions, and historical use of pyrotechnics and obscurants	Groundwater exiting to the surrounding rivers	Recreational users in the Potomac River and Nanjemoy Creek	Bald Eagles nesting within 0.5 miles of the facility's northeast boundary	Re-evaluate during the five-year review. The receptors identified are not affected by potential MCOC based on limited exposure, analytical data, and range effluent volume.