Radford Army Ammunition Plant

FACT SHEET
SWMUs 48 & 49

Introduction

This fact sheet describes the recommended action for addressing elevated constituents in soil at Solid Waste Management Unit (SWMU) 48 [Oily Water Burial Area] and groundwater at SWMU 49 [Red Water Ash Burial No. 2] at Radford Army Ammunition Plant (RFAAP).

Background

SWMUs 48 & 49 are adjacent to each other and are located in the southeastern portion of the Horseshoe Area. These SWMUs are situated on a bluff approximately 120 feet above and overlooking the New River.

SWMU 48 consists of two sets of unlined trenches, one at the northern end of the site and one at the southern end. SWMU 49 is a small clearing adjacent to a dirt road. There is no evidence of pits at this site and waste was likely disposed on the ground surface. Prior to off-post waste oil reclamation, approximately 200,000 gallons of oily wastewater removed from oil/water separators throughout RFAAP was reportedly disposed of in SWMU 48. However, the results of environmental sampling to date indicate that the oily wastewater was likely disposed of in the area associated with SWMU 49. Conversely, sampling indicates that the red water ash associated with SWMU 49 was disposed in the SWMU 48 disposal trenches. Because it is apparent that there was some degree of cross disposal occurring at SWMUs 48 and 49, this area was considered a combined study area.

Several investigations have been conducted at SWMUs 48 & 49 between 1987 and 2014 to evaluate soil and groundwater at the sites.

Interim Measures

Based on the results of a 2007 RCRA Facility Investigation (RFI) field sampling effort, an aggressive test pit exploration was performed at SWMU 48 in 2010. The test pits were advanced downward through an ash layer, and extended laterally to determine the vertical and horizontal extent and boundaries of the ash layer. Composite samples were collected and tested to determine if excavated soil contains explosive or waste characteristic concentrations above Toxicity Characteristic Leachate Procedure Regulatory Levels (TCLP RLs). Nine explosives were detected in the soil, all below the U.S. Environmental Protection Agency's (USEPA) residential Screening Levels (r-SLs), with a single detection of NG that exceeded the residential criteria. Antimony, arsenic, cadmium, copper, lead, and mercury exhibited instances of industrial Screening Level (i-SL) exceedances. Based on the concentrations of metals, an Interim Measures removal action was performed to remove the elevated metals concentrations and the ash layer. An Interim Measures Work Plan was approved by the USEPA Region III and the Virginia Department of Environmental Quality (VDEQ) in July 2011. The excavation and confirmation sampling at SWMU 48 has been completed, and the Interim Measures Completion Report has been submitted and was approved in July 2011. Following the completion of the Interim Measures, a revised RFI report was prepared and submitted to USEPA and VDEQ for review.

RCRA Facility Investigation

The data, findings, assessments, and recommendations are contained in SWMUs 48 and 49 RFI Report dated June 2012. The report has been approved by the USEPA and VDEQ.

Soil Contamination Assessment –
No analytes were detected above screening limits in 2007 soil samples from SWMUs 48 and 49. A detection of TNT above the screening levels during an earlier investigation could not be duplicated in subsequent investigations. Interim Measures were performed to address elevated constituents in soil at SWMU 48 in

2012. Soil results from SWMU 49 did not indicate any areas of contamination that needed to be addressed at the site. Therefore, soil is not a major concern at SWMUs 48 and 49.

Groundwater Contamination Assessment-

Perchlorate has been detected in the SWMU 48/49 monitoring well network during the groundwater sampling events in August of 2007. Analytical data for perchlorate range from 0.186µg/L to 0.548µg/L. The maximum contaminant level (MCL) for perchlorate at RFAAP is 15µg/L.

Groundwater samples collected from SWMUs 48 and 49 indicated that three Volatile Organic Compounds (VOCs) [carbon tetrachloride (CT), tetrachloroethene (PCE), and trichloroethene (TCE)] as well as 11 metals were detected at concentrations exceeding groundwater screening levels. The elevated metals are likely due to a high turbidity groundwater sample collected from one well on site. Comments received from USEPA and VDEQ on the draft RFI report led to additional wells being installed to the south and east of SWMU 49 to establish the extent of these VOCs in groundwater and to verify they were not impacting the New River. The RFI report was finalized in January 2014 and includes a discussion of the groundwater findings. Based on the contamination assessment, carbon tetrachloride and trichloroethene are the primary contaminants of concern.

The RFI Report for SWMU 48/49 developed Corrective Measures Objectives (CMOs) and Remedial Goals (RGs) for the contaminants of concern. The site-specific CMO is to reduce COC concentrations to below RGs/MCLs so as to not adversely impact future beneficial use of groundwater and to restore site groundwater to the most beneficial use to the extent practicable. The RGs shown in the table below will be used to compare results from groundwater monitoring events to assess the progress of the MNA at the site.

Chemical of Interest	Groundwater RG/MCL[(1)] (µg/L)
CT	5.0
TCE	5.0

Notes:
µg/L = micrograms per liter
CT = Carbon tetrachloride
MCL = Maximum Contaminant Level
RG = Remedial Goal
TCE = Trichloroethene
(1) = The RGs are also the MCLs listed in the USEPA 2011 Edition of the Drinking Water Standards and Health Advisories (USEPA, 2011a).

Monitored Natural Attenuation

A MNA Work Plan was approved by the USEPA and VDEQ. Baseline MNA groundwater sampling was conducted at SWMU48/49 in January 2015 and included the collection of groundwater samples from 15 wells. Groundwater samples were analyzed for TCL VOCs and MNA indicator parameters, including dissolved gases, anions, and total organic carbon. A baseline report was issued in July 2015 summarizing the sampling event. The first year of MNA sampling was completed in July 2016. An annual report summarizing the first year of MNA sampling is in progress. MNA groundwater sampling will continue quarterly with an annual report.