

Radford Army Ammunition Plant

FACT SHEET SWMU 54

Introduction

This fact sheet describes the selected action for contaminated soil and groundwater at Solid Waste Management Unit (SWMU) 54 – the Propellant Burning Ash Disposal Area at Radford Army Ammunition Plant (RFAAP). This alternative was selected in accordance with Part II(D)(11-21) IM of the *RFAAP Corrective Action Permit* (USEPA, 2000a). This removal action work is being performed in accordance with Contract No. W912QR-04-D-0027-DA04.

Background

SWMU 54 consists of two non-contiguous disposal areas; Area A is an approximately 0.58-acre triangular shaped area in the southern portion of SWMU 54 and Area B is an approximately 1.09-acre area in the northern portion of SWMU54.

The RFAAP RCRA Corrective Action Permit identified SWMU 54 as an area of concern that had the potential to pose a threat or potential threat to human health and the environment. The Resource Conservation and Recovery Act (RCRA) Facility Assessment (USEPA, 1987) indicated that, according to plant personnel, propellant ash disposal occurred on the surface, with no routine disposal in pits or trenches. Four previous investigations have been conducted at this site prior to completion of an interim removal measure in 1999 by Parallax, Inc that consisted of the excavation of “hot spot” areas of lead and explosives in soil.

RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS)

The RCRA facility investigation (RFI) field efforts were conducted at the site in 2008 by URS. The assessment indicated that the main concern at the site is the fill material and grossly-contaminated soil directly below the material. The main parameters of concern in Area A soil are lead, 2,4,6-TNT, DNT, RDX, amino DNTs, NG, heptachlor epoxide, and dioxins/furans. Parameters of concern in Area B soils include lead, DNT, amino DNT, NG, RDX, dieldrin, Aroclor 1254, heptachlor epoxide, and dioxins/furans.

Based on the results from the HHRA, it was concluded that based on the levels detected in the soil hot spot areas, COIs could potentially leach from soil to groundwater at levels of concern, although groundwater impacts at levels of concern have not yet been identified at Area B. Because the RFI demonstrated that COI contamination is present at concentrations associated with unacceptable human health concerns, a CMS was performed to address the propellant ash material and grossly-contaminated soil under the ash material at SWMU 54. The alternatives evaluated were as follows:

- Alternative One: No Further Action;
- Alternative Two: Excavation of Soil at Area A and Area B, Off-site Disposal, and MNA of Groundwater; and,
- Alternative Three: Excavation of Soil at Area A and Area B, Off-site Disposal, and Enhanced *In Situ* Bioremediation of Groundwater.

Alternative Two, which entails excavation and off-site disposal as the primary remediation process, was found to achieve the corrective measures objective. Therefore, Alternative Two was selected as the final alternative for SWMU 54 because it is implementable and provides a greater level of protection to human health and the environment not provided by other alternatives. In addition, Alternative Two is the sole alternative that facilitates remedial goals without potential adverse effects to groundwater (i.e., degradation of secondary water quality parameters) from remedial implementation activities, which would occur with implementation of Alternative Three.

Implementation of the Selected Corrective Measures

The selected alternative has the main goal of mitigating the further leaching of explosives constituents from soil to groundwater at levels that would potentially increase concentrations and adversely impact future beneficial use of groundwater. Remedial goals (RGs) were developed and used to confirm that all Contaminants of Interest (COIs) were removed to levels that are safe for human health and the environment. The RGs were used to compare results from confirmation samples collected after removal of the propellant ash fill and grossly-contaminated soil immediately below the fill. Confirmation samples were collected from the side walls and bottom of the excavation after visual signs of the propellant ash were removed, and concentrations were compared to the RGs to confirm that the propellant ash and grossly-contaminated soil were removed. Excavation efforts continued until confirmation sample concentrations were below the RGs. The site was then restored and vegetated. Shaw removed approximately 12,678.65 tons of contaminated soil from SWMU 54: 5,857.47 tons from Area A and 6,821.18 tons from Area B. The corrective measures soil site work was completed in October 2010.

Shaw submitted an Interim Measures Completion Report for the removal action of contaminated soil from SWMU 54 to the EPA and VDEQ in April 2011 that was approved in August 2011.

Monitored Natural attenuation of the groundwater is currently being performed and the work plan has been approved by the regulators. Four additional wells were installed downgradient of Area A and Area B to aid in gathering long term groundwater results. Sampling to see how well the remedy is proceeding has occurred seven times; with a eighth scheduled in May, and will occur quarterly until contaminants of concern are consistently below remedial goals. The Groundwater sample results from the first year of MNA sampling been submitted for review. Additional groundwater sample results will be reported on a yearly basis.