

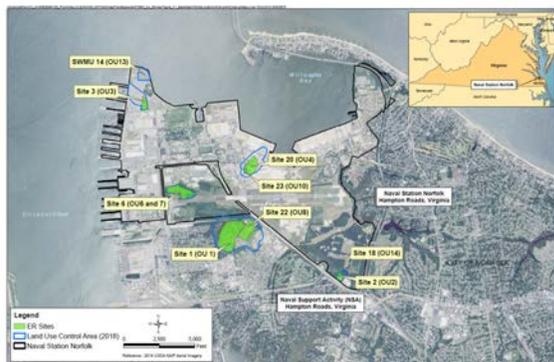


Naval Station Norfolk Installation Restoration Program FIVE-YEAR REVIEW FACT SHEET

November 2018

Introduction

The U.S. Navy in collaboration with U.S. EPA and Virginia DEQ are starting a five year review of the environmental cleanup that has been ongoing at nine sites at the Naval Station Norfolk, located in Norfolk, Virginia. The cleanup is part of Mission Cleanup, which is an ongoing federal-state partnership that capitalizes on sound science to Clean Protect & Restore federal lands nationwide. The Navy inspects the sites regularly to ensure that cleanups conducted remain protective of public health and the environment Navy's previous review of the sites in 2014 determined that the remedies were protective in the short term. This five year review is an important step in ensuring long-term Clean up, Protection & Restoration of federal land. Findings from the current review being conducted will be available in February 2019.



NSN sites evaluated under Five Year Review

The review of the nine sites is in accordance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) "Five-Year Review" requirements.

Site 1, Camp Allen Landfill

Background

The Camp Allen Landfill (CAL) consists of two distinct areas (Area A, the 45-acre landfill, and Area B, the 2-acre fire disposal area). The Area A landfill operated from the mid-1940s until 1974 and was used to dispose of metal plating and parts cleaning sludge, paint-stripping residue, chlorinated organic solvents, expired chemicals, pesticides, asbestos, incinerator ash, bottom and fly ash from the NSN power plant, and miscellaneous debris. Area B was used to dispose of wastes from a 1971 fire at the Camp Allen Salvage Yard (Site 22). Investigations at CAL indicated that the surface and subsurface soil, sediment, surface water, and groundwater are contaminated from these past disposal practices. The primary contaminants of concern are volatile organic compounds (VOCs).

Remedial Activities

Remedial activities at Site 1 included a soil removal action that was completed at Area B in 1995 to remove the primary source of contamination, as well as the installation of a groundwater extraction and treatment system in both Areas A and B. The groundwater treatment system has been in continuous operation since 1998.



Site 1 Groundwater Treatment System

The 2017 annual long-term monitoring (LTM) at the site indicates that the groundwater remediation system has limited the migration of the VOC plume towards the residential areas west and southeast of the site. However, the monitoring data shows that residual VOC source areas remain that could prolong the life of the remedy. A work plan for the optimization of the current remedial action is currently being developed. The initial phase of the optimization investigation is to further characterize the extent of the source areas by conducting geophysical surveys and direct push technology groundwater sampling. In addition, the downgradient extent of the VOC plumes will be delineated through the installation of monitoring wells and groundwater sampling. The second phase of the optimization is to evaluate remedial alternative to expedite the reduction of VOCs in the groundwater to below established cleanup levels. These alternatives may include expanding the existing remediation system through the installation of additional groundwater extraction wells or the initiation of in-situ technologies of soil mixing with zero valent iron or injection of emulsified vegetable oil.

Site 2, NM Area Slag Pile

Background

NM Slag Pile is a 1-acre disposal area for slag generated by an aluminum smelting operation that was active during the 1950s and 1960s, which resulted in lead contamination in soil. In addition, fly ash and/or

bottom ash was used as fill material to create a level surface to deposit the slag. Investigations at the NM Slag Pile showed that soil, groundwater, sediment, and surface water were adversely affected by these disposal activities. The primary contaminants of concern are metals.

Remedial Activities

In 1999, contaminated sediments were removed from the drainage channel adjacent to the site. A soil cover was placed over the grassy field and the gravel parking lot was covered with asphalt in 2000.



Site 2 Remedial Activities

The cover remedy at Site 2, NM Area Slag Pile, prevents direct contact with soil and sediment. Supporting inspection information and monitoring data indicate the soil covers are in good condition. Exposure pathways that could result in unacceptable risks are being controlled through a combination of the use of the cover, LUCs, and the implementation of ICs.

The LTM demonstrated that the lead concentrations in groundwater have been reduced to below its cleanup goal. As a result, the monitoring frequency has been reduced to sampling once every five years. LUC inspections will be completed on a quarterly basis.

Site 3, Q Area Drum Storage Yard

Background

Site 3 was a 5-acre open earthen yard used from the 1950s to late 1980s to store tens of thousands of drums containing new petroleum products, chlorinated organic sol-

vents, paint thinners, and pesticides. In 1983, the potential for site contamination was identified by the presence of dark stains on the soil and oil-saturated soil throughout the storage yard. The drums were removed, and the characterization of the contamination, conducted from 1983 to 1986, indicated that soil and groundwater were contaminated with metals and VOCs. Subsequent investigations identified two separate groundwater VOC sources - Area of Concern (AOC) 1 and AOC 2.

Remedial Activities

In 1987, approximately 750 cubic yards of oil-saturated soil were removed and this area of the site was paved. In addition, two air sparge/soil vapor extraction (AS/SVE) systems were installed to treat the separate source areas and prevent migration of site contaminants into the Elizabeth River, in accordance with the 1996 *Proposed Remedial Action Plan* and *Decision Document*. These systems began continuous operation in 1998.



Site 3 Remedial Activities at Site 3

The treatment systems have significantly reduced the concentrations of the COCs at the site and prevented further migration of the contaminant plume. Accordingly, the AS/SVE systems have been shut down and LTM of groundwater continues on an annual basis.

The LTM site groundwater concentrations are approaching the maximum contaminant levels (MCLs). Once this is achieved a close out strategy will be developed to discontin-

ue the LTM. In the interim, the exposure pathways that could result in unacceptable risks are being controlled through a combination of the groundwater treatment systems, LUCs, and the implementation of ICs.

Site 6, CD Landfill

Background

The CD Landfill covers approximately 22 acres and incorporates two separate areas of former landfill operation—the eastern section and western section. The eastern section of the landfill operated from 1974 to 1979 and was used for the disposal of demolition debris, inert solid waste, fly ash, and incinerator residue. The western portion of the landfill was permitted by the Virginia Department of Health for disposal of demolition debris and other inert wastes. The western landfill operated from 1979 to 1987. Investigations showed that soil, sediment, groundwater, and surface water were adversely affected by these disposal activities. The primary contaminants of concern are VOCs and metals.

Remedial Activities

A selected amount of contaminated sediments was removed in 1997. In 1999, an engineered composite geomembrane landfill cap for the site was installed to cover the contaminated soils and the remaining sediments at the site.



Site 6 During Construction

The combination of the landfill cover and ICs is effective in meeting the remedial

objectives to prevent direct contact, inhalation, and ingestion of contaminated soil, groundwater, surface water, and sediment. Groundwater monitoring continues at the site, in coordination with the Virginia Department of Environmental Quality.

Site 18,

Background

The NM Storage Area was used from 1975 to 1979 to store drums of hazardous waste, consisting of waste oil, metal plating solutions and sludges, chlorinated organic acids (including TCE and 1,1,1-trichloroethane), and paint stripping solutions. Spillage of waste oil and hazardous wastes occurred in this area. A pit was excavated and an existing drainage ditch was widened and lengthened to channel waste oil and contaminated runoff into an unlined pit. Oil and contaminated water were periodically pumped from the pit and transported to a wastewater treatment plant.

Remedial Activities

Site investigations completed from 2001 to 2004 indicated that there was evidence of naturally occurring biodegradation of the VOCs detected within the groundwater. In 2008 and 2010 interim remedial actions using enhanced reductive dichlorination, techniques, consisting of substrate injections of emulsified vegetable oil, were implemented to reduce the VOC concentrations that were detected above cleanup levels at six monitoring wells.



Site 18 Substrate Injection Layout

In 2010 the ROD identified the final remedy as continued enhanced bioremediation with LUCs and groundwater monitoring.

The 2017 LTM demonstrated that the enhanced bioremediation have reduced the VOC concentrations by over 95% and only one of the wells continues to have VOCs above the cleanup levels.

Site 20, Building LP-20

Background

Building LP-20 was used for aircraft engine overhaul and maintenance. Previous activities at the building included painting, x-ray facilities, as well as cleaning and blasting. Waste products from these activities were transferred to the industrial wastewater treatment plant via underground piping. In addition, a large fuel storage area, known as the LP Fuel Farm, is located south of the building. An underground fuel pipeline extends from the Fuel Farm to buildings east of the site. From the 1940s to 1990s, numerous spills or releases of wastewater and petroleum have been documented, with significant releases associated with damage to the underground wastewater lines during construction activities, and leakage of the underground fuel pipeline. Investigations at the site showed that the primary contaminants of concern are VOCs.

Remedial Activities

An AS/SVE treatment system was constructed and began continuous operation in 1998. This system was supplemented with a groundwater extraction system in 2010. The existing AS/SVE and groundwater extraction and treatment systems at Site 20 were discontinued due to limited efficiency and operational challenges (i.e., petroleum free product capture and high iron content).

The Team effectively worked through the myriad of logistical challenges faced at the site when evaluating remedial technologies and agreed to implementation of a pilot test to assess the effectiveness and feasibility of treating VOCs at the site utilizing a sub-grade biogeochemical reactor (SGBR).

Although the 2017 LTM has demonstrated an overall decrease in the VOC concentrations detected at Site 20 has occurred; VOC concentrations exceed their cleanup goals at several monitoring wells.. Because the AS/SVE system may have reached its limits of effectiveness, the NSN Partnering Teamis has agreed to the implementation of pilot test to assess the effectiveness and feasibility to treat the VOCs using a subgrade biogeochemical reactor (SGBR).



Site 20 Sie map with VOC plume boundaies

Site 22, Camp Allen Salvage Yard *Background*

Site 22 operated from the 1940s until 1995, salvaging and processing scrap materials generated at NSN. A polychlorinated biphenyl (PCB) spill occurred at Site 22 in 1989, when a transformer was damaged by a forklift. The Navy responded to the spill and conducted a preliminary cleanup at that time. When operations ceased in 1995, the site buildings, incinerators, and rail lines were demolished.

A preliminary assessment/site investigation was conducted for the salvage yard, and the investigation results indicated that the surface and subsurface soil were contaminated with PCBs, pesticides, and metals. Additional data generated during the remedial investigation/risk assessment showed that the shallow and deep groundwater aquifers in the vicinity of the site, as well as the sediment, were contaminated with PCBs and metals. However, the human health risk assessment conducted for the site identified no unacceptable risk from

exposure to groundwater for the exposure scenarios evaluated.

Remedial Activities

The initial remedial action at Site 22 consisted of a non-time-critical removal action and offsite disposal of metals and PCB-contaminated soils..

In 2003, the Navy completed an engineering evaluation/cost analysis for the site. The removal action consisted of removing contaminated sediment and installing a soil cover and sediment cover for the remaining contaminated pond sediment. The soil cover and the cover for the sediments in the pond were completed in June 2004.



Site 22- Recreation Area restores site to beneficial re-use

The covers placed over soil and sediment at Site 22, coupled with the implementation of LUCs, has achieved the remedial objectives of reducing the threat of the covered soil from becoming a potential source of contamination to human and ecological receptors and the threat of the covered sediment from becoming a potential source of contamination to ecological receptors in the pond area.

Quarterly inspections will continue. to ensure the LUCs are maintained.

Site 23, Building LP-20 Plating Shop *Background*

Site 23, Building LP-20 Plating Shop, is located inside Building LP-20 (Site 20). In the past, a portion of the building was used for aircraft engine overhaul and mainte-

nance. Currently, the building is used as a motor pool and office space. The former Plating Shop area within the building, designated Site 23, is currently available for use as warehouse storage space. It is anticipated that use of the site will continue to be industrial. No residential development is planned or expected for Building LP-20 or the immediate surrounding area.

Remedial Activities

A concrete cover was placed at Site 23, providing a protective barrier to prevent exposure to contaminated soils beneath the former Plating Shop. LUC restrictions are being implemented consistent with the objectives provided in the September 2008 *Record of Decision*. Site inspections have shown that the concrete cover is functioning as intended. Implementation and maintenance of LUCS/ICs will continue to prevent exposure to contaminated media.

SWMU 14 Sattelite Accumulation Area Background

The Q-50 Satellite Accumulation Area SWMU 14 consisted of a concrete storage pad surrounded by a grass-covered field. The pad served as a 90-day hazardous waste accumulation area where wastes generated through various waste streams were processed (sampled, identified, labeled, and packaged) before being shipped for eventual disposal.

From 2008-2010 remedial actions were implemented to mitigate potential unacceptable human health risk from exposure to contaminated surface soil, subsurface soil, and subsurface debris by constructing an asphalt cover. followed by LUCs to prevent exposure to soil by human receptors. Potential risks associated with groundwater are deemed acceptable and no action for groundwater was required. Quarterly inspections will be completed at the site to ensure the LUCs have not been impacted



SWMU 14 -Mitigated area showing restoration with asphalt parking are and fishing pier

Five Year Review Schedule

The completion of the Five-Year Review for NSN is scheduled to be completed in February, 2019, 5 years from the completion of the previous review.

Information Repositories and Administrative Record

Mission Cleanup's success relies on ongoing public awareness and engagement in cleanup milestones such as this Five Year Review Start, as public participation is critical to our ability to Clean, Protect & Restore federal land.

To achieve this goal NSN has established an information repository so that the Base and the community have access to the Mission Cleanup documents. The information repository, listed below, typically contains study reports, fact sheets, brochures, letters, and other items of interest.

The information repository is different from the Administrative Record. The Administrative Record is the legal record of all the information reviewed and considered in order to propose site cleanup actions. The Administrative Record is available at the same location as the information repository.

Information Repository

Norfolk Main Library
235 East Plume Street
Norfolk, Virginia 23510
(757) 664-7337

Point of Contact

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To access detailed site information:

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