RED HAFB/2001-2002

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH FIGHTER WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO

ENTERED

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT
Mr. Cornelius Amindyas
Hazardous Waste Bureau
4131 Montgomery NE
Albuquerque, NM 87109

30 NOV 2001

FROM: 49 CES/CEVR
550 Tabosa Ave
Holloman AFB NM 88330-8458

SUBJECT: SWMU 141 No Further Action Proposal Information, Draft Final PA/SI Report, Section 5

1. Attached is the information you requested concerning Solid Waste Management Unit (SWMU) 141, Pad 9 Drainage Pit. The information is extracted from the *Draft Final Preliminary Assessment and Site Investigation Report, Investigation of Four Waste Sites*, Nov 93.

2. If you have any questions or require additional information, please contact me at (505) 572-5395.

JOSE A. GALLEGOS
Chief, Restoration/Pollution Prevention Element

Attachment:
Section 5 of PA/SI Report , Working File 17-A-54
(7 pages including Report's cover page and pages 5-1 to 5-6)

Section 5
SITE SD-27—PAD 9 WASHRACK AREA

Section 5 details the results of the IRP site investigation for Site SD-27. This site is also SWMU 141 on Table 2 of Holloman AFB's HSWA permit, and must be addressed under the RCRA corrective action program in an RFI. The work done for this field investigation was submitted and approved in the *28 Sites Phase I RFI Work Plan* (Radian, 1993), and the results of this investigation will be used to support the Phase I RFI.

5.1 Site Description

The Pad 9 Washrack Area is located east of Taxiway F near Building 882. The washrack was reportedly used to wash down drones and manned aircraft that had flown through clouds of nuclear blast materials in the late 1940s and early 1950s.

Colonel Forrest Spresster, formerly of the Holloman AFB Bioenvironmental office, was contacted to obtain more information about the site. In the early 1970s, Colonel Spresster interviewed civilian employees who knew of activities at the Pad 9 washrack. The planes washed at the site were reportedly involved in a project studying fallout from nuclear explosions. The planes were equipped with air sampling devices and were flown through blast clouds to collect fallout samples. The samples were reportedly analyzed on site at a building that no longer exists. The location of the building could not be confirmed during the literature search. Following sampling activities, the planes were washed down with water. According to Colonel Spresster, the pad has not been used for aircraft maintenance since these activities took place.

All runoff from the washrack drained into an unlined pit directly south of the pad area. The pit was approximately 12 ft deep. In May 1976, Colonel Spresster collected soil samples from the bottom of the pit and submitted them for analysis. The analytical results indicated no radiation above normal background levels. The pit was backfilled after this soil sampling event.

Site features are illustrated in Figure 5-1. The pad is in fair condition, exhibiting some cracks mainly along concrete seams. The sump in the middle of the pad

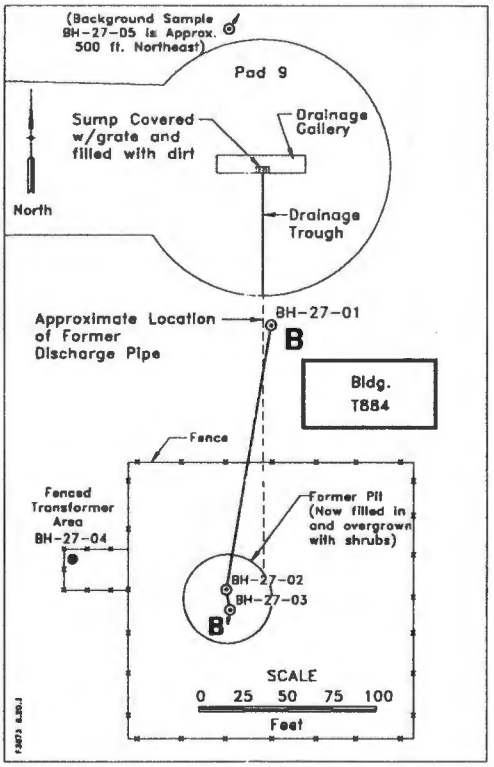

Figure 5–1 Site SD-27 Features

is filled with soil and has plants growing in it. The drainage gallery from the sump to the southern edge of the pad is filled with dirt. It is not known whether the dirt in the sump and drainage gallery is underlain by concrete, or whether runoff drained through a pipe or a lined or unlined ditch.

The area of the former pit is now surrounded by a slightly damaged wire-mesh fence and is overgrown with bushes and small trees, most of which were removed for this investigation. An abandoned transformer is located adjacent to the fence west of the former pit. The abandoned transformer is surrounded by a chain-link fence. The ground around the abandoned transformer is stained.

5.2 Site Investigation

This investigation focused on three principal areas of possible contamination:

1. The former Pad 9 drainage pit (BH-27-02 and 03);
2. The fenced transformer area (BH-27-04); and
3. An area south of Pad 9 near the former drainage pipe (BH-27-01).

A total of six soil samples were collected at Site SD–27. Table 5–1 lists the nature of the contaminants of concern, types of samples collected, and results for Site SD–27. The results of soil analyses for organic constituents, radioactivity, and PCBs are summarized in Tables 5-2, 5-3, and 5–4, respectively. Soil sampling locations are shown in Figure 5-1.

Table 5-1
Site SD-27 Investigation Summary

Suspected Contaminants	Types of Samples Collected	Results Summary
PCBs	One surface sample from the abandoned transformer area analyzed for PCBs	PCBs detected
Alpha, beta, and gamma radiation	One sample from just south of the pad Three samples from the two borings in the former pit area; one background sample	Alpha and beta radiation detected at levels comparable to background
Fuels	One sample from former pit	Fuel hydrocarbons detected in sample from base of former pit area

Table 5-2
Concentrations of TFH Analytes in Site SD-27 Soils

		SW8015ME Extractable Fuel Hydrocarbons (µg/g)		SW8015MP Purgeable Fuel Hydrocarbons (µg/kg)					
		Kerosene		Ethylbenzene		Toluene		Xylenes (Total)	
Location	Depth (ft)	Results	(RL)	Results	(RL)	Results	(RL)	Results	(RL)
BH-27-03	8–10	430	(68)	680[C]	(41)	51[C,e]	(41)	2700[C]	(68)

Note—RL = Reporting limit. Refer to Section 8 for explanation of footnote(s).

Table 5-3
Radioactivity Levels in Site SD-27 Soils

		SW9310 Gross Alpha and Gross Beta (pCi/g)			
		Gross alpha		Gross beta	
Location	Depth (ft)	Result	(RL)	Result	(RL)
BH-27-01	0–2	8.95	(3.63)	16.69	(5.52)
BH-27-02	6–8	19.29	(3.76)	15.31	(5.22)
BH-27-03	8–10	13.5	(3.71)	12.15	(5.92)
BH-27-05*	4–6	7.35	(3.61)	7.68	(5.94)

Note—RL = Reporting limit. Refer to Section 8 for explanation of footnote(s). *Background sample.

Table 5-4
Concentrations of PCBs in Site SD-27 Soils

		SW8080—PCBs (µg/kg)	
		PCB-1254	
Location	Depth (ft)	Result	(RL)
BH-27-04	0–2	200*	(87)

Note—Refer to Section 8 for explanation of footnote(s).

5.3 Geology and Hydrogeology

The subsurface conditions at Site SD–27 were defined by direct sampling and observation of the drilling operations at four soil borings. Drilling logs located in Appendix B provide a detailed description of site stratigraphy.

To correlate and interpret the site stratigraphy, cross section B-B′, shown in Figure 5-2, was constructed from boring logs for Site SD–27. Figure 5-1 shows the location of the cross section. Site lithology consists primarily of silt interbedded with lenses of clay and sandy clay. In the vicinity of the former waste disposal pit, shown in Figure 5-1, fill material was encountered at a depth of 8 ft. A clayey sand unit with caliche underlies the pit.

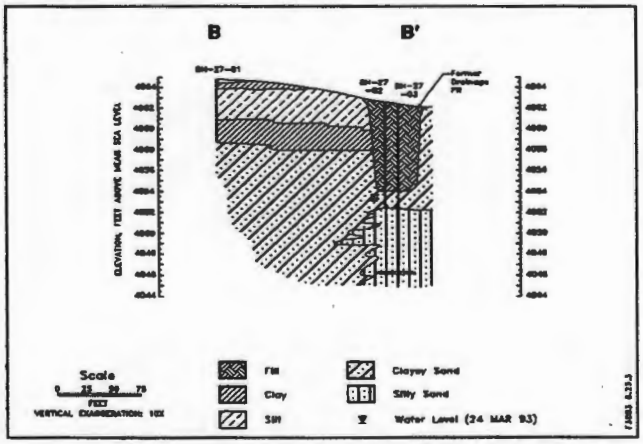

Figure 5–2 Site SD-27 Geologic Cross Section

5.4 Conclusions

5.4.1 Presence or Absence of Contamination

As presented in Table 5-3, gross alpha and beta radioactivity were detected at comparable levels in potentially affected areas and background. In addition, detected radioactivity levels were compared with *Waste Acceptance Criteria for Radioactive Solid Waste Disposal at SWSA-6* (Oak Ridge National Laboratory [ORNL], 1993). Solids with alpha activity exceeding 30 pCi/g are considered radioactive waste by ORNL. None of the samples at Site SD-27 exceeded these levels; thus, radioactivity is not a problem at this site.

Stained soil with a fuel odor was encountered at the base of the former pit below the water table. However, soil above the water table was not stained (it is primarily fill used to cover the former pit). Fuel staining was observed in all of the three soil borings below the water table; soil was stained from approximately 8 to 16 BGL. It is believed that the extent of affected media is limited to the saturated soil below the former pit. The source of fuel staining is most likely the result of runoff from Pad 9 that drained into the unlined pit.

A sample of the stained soil was collected and analyzed for TFH (modified SW8015) from one of three soil borings (BH-27-03) drilled in the former pit, and the results are presented in Table 5-2. Kerosene, ethylbenzene, toluene, and xylenes were detected in the sample. The total concentration of these analytes (both extractable and purgeable compounds) is 3.8 mg/kg. The New Mexico standard for remediation of fuel-contaminated soil (TRPH determined by EPA 418.1) is 1000 mg/kg. Although the samples from Site SD-27 were analyzed using modified SW8015, the total concentration of the extractable and purgeable compounds provides a very conservative comparison for TRPH using EPA 418.1 (this method only determines concentrations of extractable compounds). Therefore, by using the modified SW8015 results, potential TRPH concentration of saturated soil cuttings may be 3.8 mg/kg, which is orders of magnitude below the New Mexico TRPH standard of 1000 mg/kg.

Soil adjacent to the former transformer area was collected and analyzed for PCBs. PCBs were detected at a concentration of 200 µg/kg. On the basis of visual observations, the affected soil is restricted to an area on the north side of the Pad, which is approximately 3 ft wide by 5 ft long by 2 ft deep.

5.4.2 Significance of Contamination

Figure 5-3 depicts possible contaminant migration and exposure pathways for both human and ecological receptors. The constituents detected in site soils could migrate through the environment via several different mechanisms. Volatilization is likely to be minimal, given the semivolatile nature of PCBs, and the fact that the fuel hydrocarbon contamination is at the base of the former pit and is buried. Fugitive dust generation, which can transport contamination to ambient air, is of minimal concern because radioactivity was detected at levels comparable to background, the surface area of PCB contamination is very small, and the petroleum hydrocarbons detected at the site are buried.

Migration via surface water runoff, which can carry dissolved constituents and particulate matter, is minimal. There

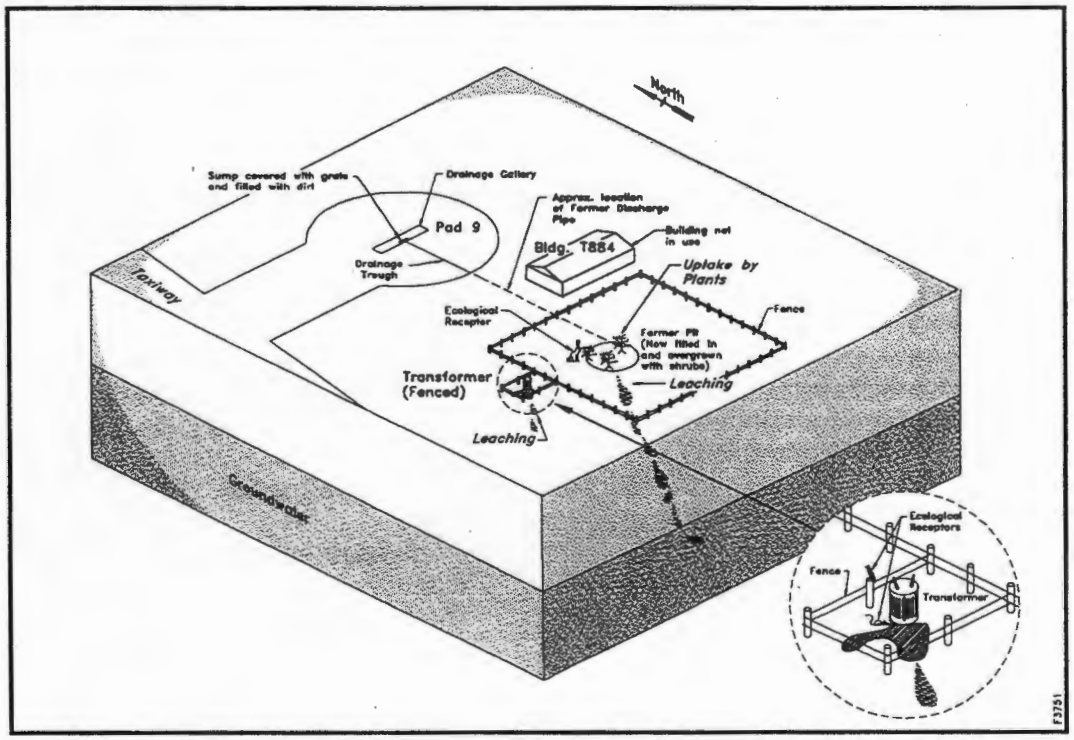

Figure 5–3 Site SD-27 Conceptual Site Model

is no known area where surface water runoff from the site collects, and the only surface contamination at the site is a very small area of PCB-contaminated soil. Infiltration and percolation of contaminants to groundwater are the most likely modes of contaminant transport at this site. The sample in which petroleum hydrocarbons were detected was taken from below the water table. However, groundwater is nonpotable and does not discharge anywhere near the site.

Off-Base residents are not expected to be affected by the site. Access to the site is severely restricted, since it is across the flightline. Ecological receptors may be exposed, via dermal contact or ingestion, to the PCBs at the surface in the former transformer area, and to fuel hydrocarbons from the former sump pit through uptake by plants. Access to the PCB-contaminated soil is restricted because the abandoned transformer area is surrounded by a chain-link fence.

The ARARs presented in the RI report (Radian, 1992) specify cleanup criteria for PCBs specified in 40 CFR Part 761, Subpart G. Requirements for cleanup of PCBs in outdoor electrical substations are contained in 40 CFR Sections 761.125(c)(2)(i) and (ii). Contaminated soil will be cleaned to either 25 or 50 mg/kg by weight provided that a label or notice is visibly posted in the area. Concentrations of PCBs at the site (200 µg/kg) are well below EPA-required cleanup criteria for PCBs. Appendix A provides a summary of the ARARs presented for PCBs at Holloman AFB.

The rule also states that in exceptional spill situations, site-specific risk factors may warrant cleanup to more stringent concentration levels. A site-specific health-based concentration was determined to evaluate whether a potential risk could exist, given existing and potential future exposure scenarios.

To evaluate potential risk for current and potential future occupational exposure scenarios, a risk-based concentration was calculated by using realistic yet conservative exposure scenarios. The site-related risk-based concentration for PCB-1254 is based on dermal exposure for an adult worker. This is based on a carcinogenic slope factor of 7.7 mg/kg/day; exposure for 5 days/week, eight hours/day, and 250 days/year for 25 years. Since no inhalation unit risk or inhalation slope factor exists, a risk-based concentration for air could not be determined. The risk-based concentration was calculated to be 987 µg/kg. This is not generated as a cleanup level, but as a check to determine what concentrations may present unacceptable risk. Appendix A contains calculations used for this risk-based level.

The concentrations of PCBs detected in the soil was 200 µg/kg, which is significantly lower than the estimated occupational exposure concentration of 987 µg/kg.

5.5 Recommendations

Unsaturated soil has not been affected by the operations at Pad 9. Therefore, no ongoing source of contamination is present in the unsaturated zone at the former pit. The saturated soil does contain some fuel hydrocarbons that are a result of runoff from the tarmac. The concentrations of the fuel constituents are, however, significantly lower than the NMED standard for remediation. Because there is no ongoing source of contamination in the unsaturated soil, and fuel concentrations are well below the 1000-mg/kg cleanup criteria, no further investigation is warranted for the former pit at Site SD-27.

PCBs present in the soil at the transformer pad are below reasonable health-based levels anticipated for existing and potential future occupational exposure scenarios. Furthermore, concentrations are below cleanup levels specified for "other restricted access areas" in 40 CFR Section 761.123. Therefore, no further action is recommended for the soil adjacent to the transformer.

Preparation of CERCLA proposed plans and decision documents for public review will be required for official site closeout. In addition, a RCRA Class 3 permit modification is necessary for a change to no-further action status.